

CHET WYSTEPEK

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CAL COM DEVELOPMENT
VACAVILLE



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VACAVILLE

PREPARED FOR:
CITY OF VACAVILLE

DECEMBER 1, 1978

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INTRODUCTION

This draft environmental impact report presents the results of an environmental assessment which was done on a proposed 468 unit (single- and multi-family) residential development located on 88 acres of unincorporated land adjoining the City of Vacaville, California. In addition to discussing the environmental impacts of the proposed project, the report discusses the regional impacts associated with development of approximately 612 acres of land lying between the project site and the present Vacaville city limits.

The Project Description section of the report contains a detailed description of the 468-unit residential development and an outline of regional development assumptions. The format used in the Environmental Elements section of the report is to first describe the environmental setting of the study area (region) and then that of the project site. Likewise, the regional impacts are discussed first and then those of the proposed project. Whenever the term "study area" is used in the report it means the region (700 acres) including the project site. When the term "project site" is used, it means the 88 acres of land presently proposed for development.

This draft environmental impact report, prepared by Madrone Associates for the City of Vacaville, was done in consultation with the city and other responsible agencies. The information contained herein provides base data on the existing physical and biological features of the study area and project site, and the ability of the city to provide utilities and services to the study area and the proposed development. In addition, the report identifies the major environmental impacts and recommends alternative measures to mitigate them. The report also serves as a vehicle for informing and for facilitating comment from responsible agencies and the public on the proposed project.

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SUMMARY

The City of Vacaville has sponsored this environmental analysis to assess both the specific and regional impacts associated with the proposed Cal Com Development project. The study area, which includes the project site, consists of 700± acres of land bounded by Interstate Highway 80, Elmira Road and Nut Tree Road. The project site itself is an 88-acre piece of land at the eastern end of the study area. The site is bordered by Putah South Canal, Elmira Road and Nut Tree Road.

Cal Com Leasing and Development Company proposes the annexation of the project site into the City of Vacaville. Along with the annexation request, Cal Com has submitted a development plan which envisions 468 single- and multi-family residences.

Impacts of the proposed development have been summarized in Table 1 which follows. Impacts have been rated according to type of effect and area affected, and term of effect. Coordinating mitigation measures, when they are possible, are listed across from each impact in the table and are delineated by those which are keyed to existing regulations and those which are suggested by the consultants as additionally beneficial to the project.

LEGEND FOR TABLE 1

B = Beneficial impact
A = Adverse impact
* = Impact of indeterminant nature
R = Impact associated with study area
P = Impact associated with project site
IMP = Importance
S = Short-term impact
L = Long-term impact
E = Mitigation keyed to existing regulations
and clearly enforceable as condition of
approval
C = Mitigation suggested by consultants as
additionally beneficial to the project
CUM = Cumulative

TABLE 1
IMPACTS AND MITIGATIONS SUMMARY
PROJECT STUDY AREA (CAL-COM DEVELOPMENT PROJECT SITE)

IMPACTS	B/A	R/P	IMP	S/L	E/C	CUM	MITIGATIONS
<u>CLIMATE AND AIR QUALITY</u>							
1. HC and CO emissions from construction equipment and increased particulate generation from excavation and grading will temporarily deteriorate local air quality.	A	R/P		S	C		1.a. Use efficient, low-emission and well-maintained construction equipment. 1.b. Wet down or cover excavated or graded areas, particularly during period of high winds, to minimize the amount of dust generated.
2. Increased CO, HC and NO _x emissions from development-generated vehicular traffic will contribute to the deterioration of local air quality.							
	A	R/P		L	C	X	2.a. Construct and designate bicycle and pedestrian pathways throughout the project site as well as a connecting pathway or right-of-way to the central Vacaville commercial district to reduce automobile traffic. 2.b. Expand existing mini-bus shuttle service to include the project site.
<u>GEOLOGY AND SOILS</u>							
1. Ground failure (liquefaction) may occur in the event of an earthquake.	A	R/P		L	E		1. Detailed soils investigation should be made of site prior to Final Map approval.
2. Due to the high shrink-swell potential associated with some of the soil units, rain or subsidence could possibly occur within the development.	A	R/P		L	E		2. The design of underground utilities should consider subsidence and differential settlement.
<u>SURFACE HYDROLOGY</u>							
1. Surface runoff from project site would be increased due to the paving of streets, driveways, sidewalks, and other improvements.	A	P		L			1. None
2. Residential waste products would be discharged into Ulatis Creek.	A	P		L			2. None
<u>VEGETATION AND WILDLIFE</u>							
1. Eventual development of the study area will result in loss of agriculturally productive soils and habitat associated with agricultural lands.	A	R/P		L		X	1. None
2. The mature trees on the project site could potentially be destroyed by widening of roads and the construction of residential units. The lesser impact would be damage caused to the trees by construction equipment and related activities.	A	P		L	E		2. The mature trees on the site are nearly all in good health and should be preserved to the fullest extent.

TABLE 1 (continued)

IMPACTS	B/A	R/P	IMP	S/L	E/C	CUM	MITIGATIONS
VEGETATION AND WILDLIFE (cont'd)							
3. Removal of the trees could possibly include the native Northern California black walnut listed as a rare and endangered species.	A	R/P	✓	L	C		3. Further investigation as to the actual location of these trees should be conducted in April-May during flower period. These trees must be preserved.
4. The gardens surrounding the ranch could be destroyed with the construction of residential units.	A	P		L	E		4. Consideration should be given to retaining the gardens for their aesthetic, horticultural and historical value.
5. Damage would occur to Ulatis Creek banks and riparian vegetation and habitat through direct encroachment by people and domestic animals, or by dumping of garden and other debris, or by contamination from fertilizers, pesticides, and other pollutants typical of urban runoff.	A	R/P		L	E		5.a. Development should be set back a minimum of 50 feet from the top of the creek banks to preserve integrity of riparian zone and minimize danger from bank slippage during flood flows. 5.b. Opportunity to enhance creek banks with introduced native plants.
ARCHAEOLOGY							
1. Field survey indicates no adverse impacts on known archaeological resources. However, dense ground cover prevented thorough investigation of certain portions of the site.	A	R/P		L	C		1. The project site should be cleared and examined by an archaeologist before finalization of development plan to properly determine that no archaeological resources exist. Likewise, as portions of the study area are considered for development, archaeological field surveys should be conducted of the affected acreage.
2. The existing ranch on the project, which has been determined to be of great historical significance, could be destroyed by the development of residential units. Even if retained, its visual qualities would be diminished by the new development.	A	P	✓	L	E		2.a. To ensure the preservation of a potentially significant historical landmark, it is recommended that the entire ranch complex be retained. 2.b. A title search and historical documentation of the ranch should be conducted to examine its potential eligibility to the National Register of Historic Places or inclusion within an historic district already listed on the Register. 2.c. The property owner/developer should be informed of the tax incentives provided in P.L. 94-55 for the preservation and rehabilitation of historic commercial and income-producing structures. 2.d. The majority of the trees and vegetation surrounding the ranch should be retained to serve as a visual buffer from project development.

TABLE 1 (continued)

IMPACTS	B/A	R/P	IMP	S/L	E/C	CUM	MITIGATIONS
<u>VISUAL</u>							
1. Development of the site offers an opportunity to improve visual character of the study area.	B	R/P		L	C		1. Variation in structural heights as well as in density and height of vegetation could provide visual diversity to an otherwise homogeneous flat landscape.
2. The possible removal of the ranch would destroy the site's visual link with Solano County's agricultural past.	A	P		L	C	E	2.a. The ranch should be preserved and maintained for some type of commercial or community use. 2.b. The walnut, eucalyptus and valley oak trees surrounding the ranch should be preserved.
3. Portions of the existing riparian area could be removed by the development of multi-family units along Ulatis Creek.	A	P		L	C		3. Since Ulatis Creek is a significant focal point of the project site, care should be taken to preserve the creek for its visual and riparian qualities. Trees and vegetation along the riparian corridor as well as in the immediate vicinity should not be removed.
4. The Southern Pacific Railroad and Elmira Road will adversely impact the views from the residential lots at the southern end of the project site.	A	P		L	C		4. & 5. Trees and shrubs should be planted along the fences by Elmira and Nut Tree Roads to break up the fence line.
5. Proposed fences along Elmira Road and a portion of Nut Tree Road will create a wall-like visual impact.	A	P		L			
6. The possible widening of roads would result in the loss of valuable walnut trees lining the roadways.	A	P		L	C		6. All attempts should be made to preserve the Walnut and other trees in the project site.
<u>TRAFFIC</u>							
1. By the year 2000, the traffic volume is projected to increase 3 to 4 times over its present level. This will lead to severe congestion at several intersections in the area.	A	R	✓	L	C	X	1. & 2. a. Develop an alternate route via an upgraded Imperial Road between Browns Valley Road and the Monte Vista Avenue/I-80 Bridge. b. Nut Tree Road will require widening to 4 lanes from Elmira to the proposed collector Street "A." All efforts should be made to retain the existing trees along the roadway. Nut Tree Road should be relocated at Orange Drive to tie into the road leading to the bridge over I-80.
2. Without alternate routes, Elmira Road at I-80 may carry as much as 40,000 vehicles per day by the year 2000.					E		
3. Development-generated traffic can be expected to increase the volume on Nut Tree Road, north of Elmira, by 100% and on Elmira Road, west of Nut Tree, by approximately 30%. This would pose severe adverse impacts on traffic safety at the rurally designed intersection of Elmira and Nut Tree Roads and would cause excessive delays during peak periods.	A	P	✓	L	E	E	3.a. Elmira and Nut Tree Roads should be widened during construction phase to provide half of a future 4-lane Road. b. Left and right turn lanes should be provided on Elmira and Nut Tree Roads where appropriate. c. Collector Street "A" should be located to be consistent with the Regional Circulation System.

TABLE 1 (continued)

IMPACTS	B/A	R/P	IMP	S/L	E/C	CUM	MITIGATIONS
<u>TRAFFIC</u> (cont'd)							
4. Collector Street "A" would severely impact the homes presently designed to front it.	A	P		L	C		4. This impact could only be mitigated by eliminating the homes fronting the street or by redesigning the site plan.
<u>NOISE</u>							
1. I-80 would present severe noise impacts on residences located within 2,000 feet.	A	R		L	C		1. Limit development in this portion of the study area to commercial/industrial land-use types which are more compatible with higher noise levels. These land-use types could also serve as a partial noise barrier between residential developments and the highway.
2. The majority of homes within the project site would be exposed to noise levels of less than 60 CNEL. This level would be exceeded, however, for homes along Elmira and Nut Tree Roads.	A	P		L	E		2. A noise barrier should be constructed along the rear property lines of homes adjacent to Elmira and Nut Tree Roads.
3. Project-related traffic will increase noise levels to a negligible extent.	A	P		L			3. None.
4. The relocation of Fire Station #2 at the intersection of Elmira and Nut Tree Roads will cause temporary disturbance to nearby residences when fire calls occur.	A	P		S			4. None.
<u>SOCIOECONOMIC</u>							
1. As a result of the 1% tax rate imposed by Proposition 13, the City will not benefit as much as it has in previous years from the property tax revenues to be generated by project development since its proportionate share has been reduced. Thus, property tax revenues would not cover as many of the costs of providing additional public services and utilities required by the new development.	A	P		L	C		1. Although no mitigations exist for the fiscal impacts caused by Proposition 13, service costs to the City are partially mitigated by fees imposed on the developer for the expansion and provision of additional services. These fees could be raised to further offset development-related costs.
2. Water demand at full development can be met if project is constructed in phases.	*	P		S	C		2.a. Install water conservation devices in homes and irrigation systems. 2.b. Use drought-resistant plants in landscaping.
3. The Elmira wastewater treatment facility is not capable of handling the effluent to be generated by the project at full development for the next two years.	A	P		S	E		3. Strict adherence should be made to the City's adopted growth management plan to ensure that the new development does not exceed the capabilities of the Elmira wastewater treatment plant.

TABLE 1 (continued)

IMPACTS	B/A	R/P	IMP	S/L	E/C	CUM	MITIGATIONS
4. Solid waste generation from development of the study area and project site will have minimal impact on the city's solid waste capacity.	*	R/P		L	C		4. Use nondisposable containers, resource recovery systems and energy development to decrease solid waste load in order to prolong the life expectancy of the county's existing and planned landfill sites.
5. New high school students associated with the project will intensify the need for a new high school.	A	P		L	E		5 & 6. The City of Vacaville should work with the Vacaville Unified School District to assure that new residential developments provide dedication of school sites and facilities when needed.
6. Vacaville Unified School District will need a new elementary school and site within the study area, but not on the project site.	A	R		L			
7. Full buildout of the study area and adjacent lands will require increasing Fire Station #2 to a 5-man station, resulting in the hiring of 3 additional firefighters.	A	R		L	E		7 & 8. a. Fire safety can be assured by strict adherence to the city's growth standard. b. Fire hydrants should be placed every 500 feet throughout the project site.
8. Development of the project site will pose no problems to the city's present firefighting capabilities	*	P			E		
9. Development of the project site itself will not seriously impact police capabilities. The occurrence of leap frog development in the study area, however, would make patrolling and protection service more difficult.	A	R/P		L	C	X	9 & 10. a. Incorporate crime prevention techniques into building design and construction. This includes proper lighting and identification of residences. b. Encourage citizen involvement in neighborhood crime awareness and prevention programs in order to reduce potential crime in the residential areas.
10. Complete buildout of the study area would require the addition of 10.6 enforcement officers and 2 vehicles, resulting in an additional cost of \$332,000 to the police department.	A	R		L	C	X	
11. Development of the project site will increase the need for park facilities and recreational programs in the city.	A	P		L	E		11.a. Developer could make onsite park dedication and pay costs of building it to city's specifications. 11.b. Developer could furthermore establish a maintenance district to cover park maintenance costs.
<u>ENERGY</u>							
1. Project will consume energy for heating, cooling, and other domestic uses.	A	P		L	C		1.a. Home design and siting should take advantage of solar radiation. 1.b. State energy conservation regulations should be fully complied with. 1.c. Developer should participate in the Pacific Gas and Electric conservation home program to reduce energy requirements for the project.
2. Substantial fuel energy consumption will result from automobile trips generated by the project.	A	P		L	C		2.a. Construct pedestrian/bicycle pathways throughout project site as well as a connecting link to the city's commercial district. 2.b. Expand existing muni-bus shuttle service to include project site.

PROJECT LOCATION AND DESCRIPTION

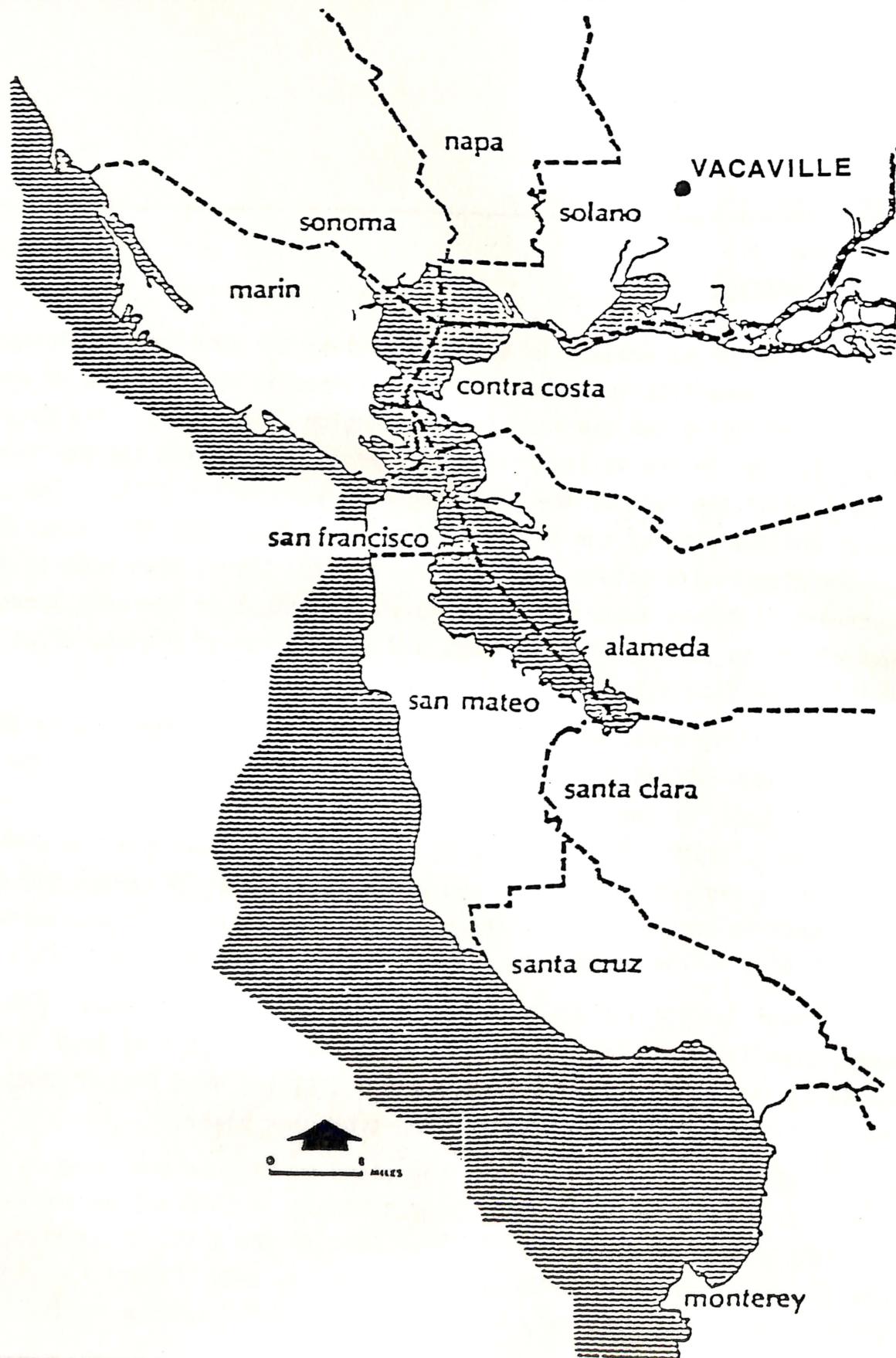
PROJECT LOCATION

The proposed project is to be located in the immediate vicinity of the City of Vacaville in Solano County, California, which is one of nine counties making up the San Francisco Bay Region (Figure 1). The City of Vacaville lies in the Valley region between Sacramento and the Bay Area (Figure 2) at the foot of the Vaca Mountains and English Hills. The city center and the area of the original town lie to the north of Highway 80. Current city limits extend along Highway 80 from Cherry Glen Road in the southwest to Midway Road in the northeast. Portions of the city extend west almost to Peasants Valley Road, and as far east of Highway 80 as the Southern Pacific Railroad line.

The study area, which includes the project site, consists of 700⁺ acres of land located just east of Highway 80. It is bordered on the south by Elmira Road, on the east-northeast by Nut Tree Road, and on the west-northwest by Highway 80. (Figure 3). Uatis Creek traverses the area in a generally east-west direction and Putah South Canal traverses the site from north to south. The topography of the study area is flat, except for a small hill in the eastern portion of the area just north of Ulatis Creek.

Over half of the study area is presently unincorporated. The incorporated lands include the parcels just south of Nut Tree Road in the north and the land between Ulatis Creek and Elmira Road from Highway 80 up to and including the city's wastewater treatment plant.

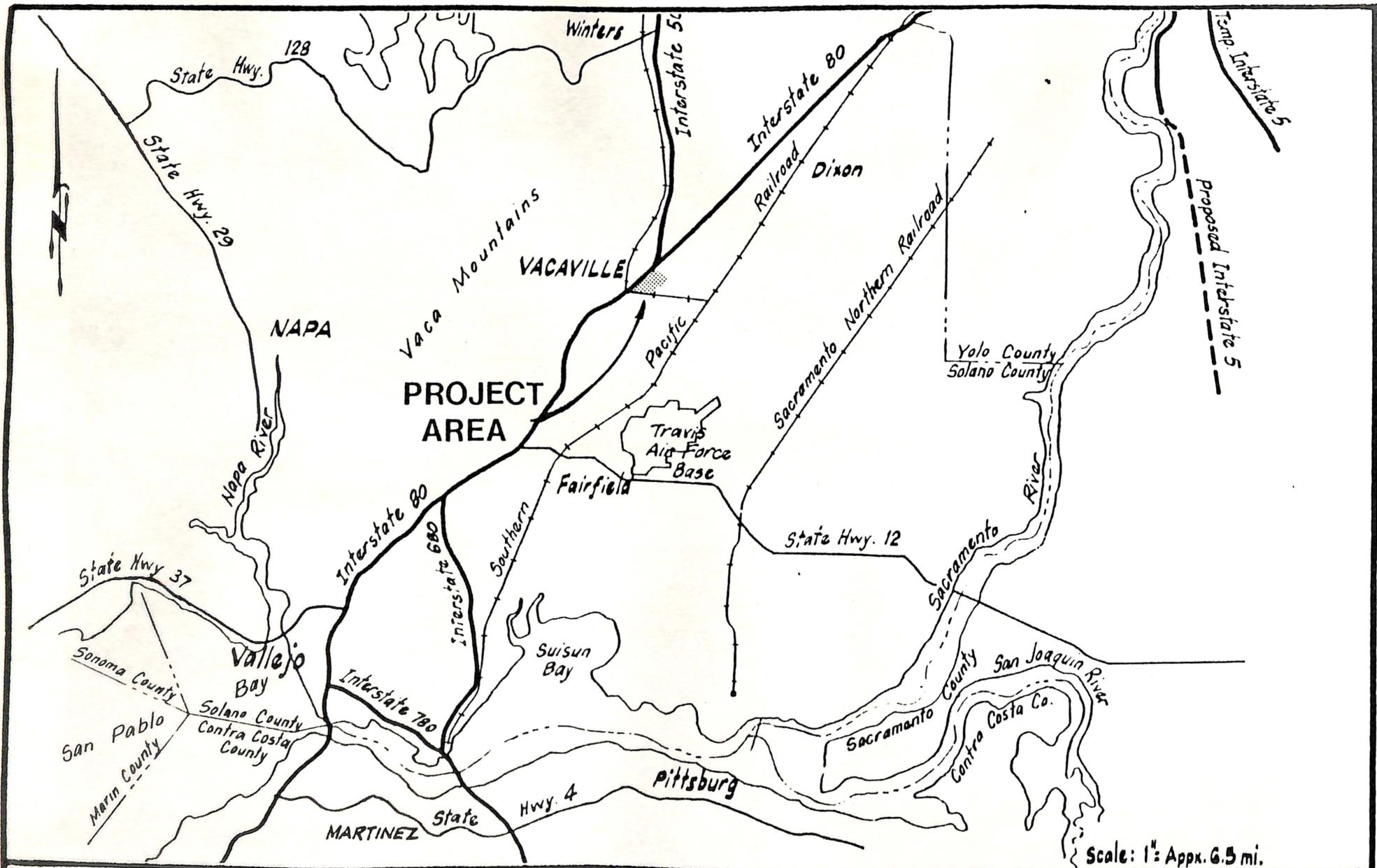
The project site is an 88-acre piece of land at the eastern end of the study area. The site is bordered by Putah South Canal on the west, Elmire Road on the south, and Nut Tree Road on the east. A portion of Ulatis Creek forms the northern boundary of the site (Figure 4). The subject property is entirely flat and is presently used for agriculture.



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REGIONAL LOCATION

FIGURE
1



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LOCATION - CITY OF VACAVILLE

FIGURE
2

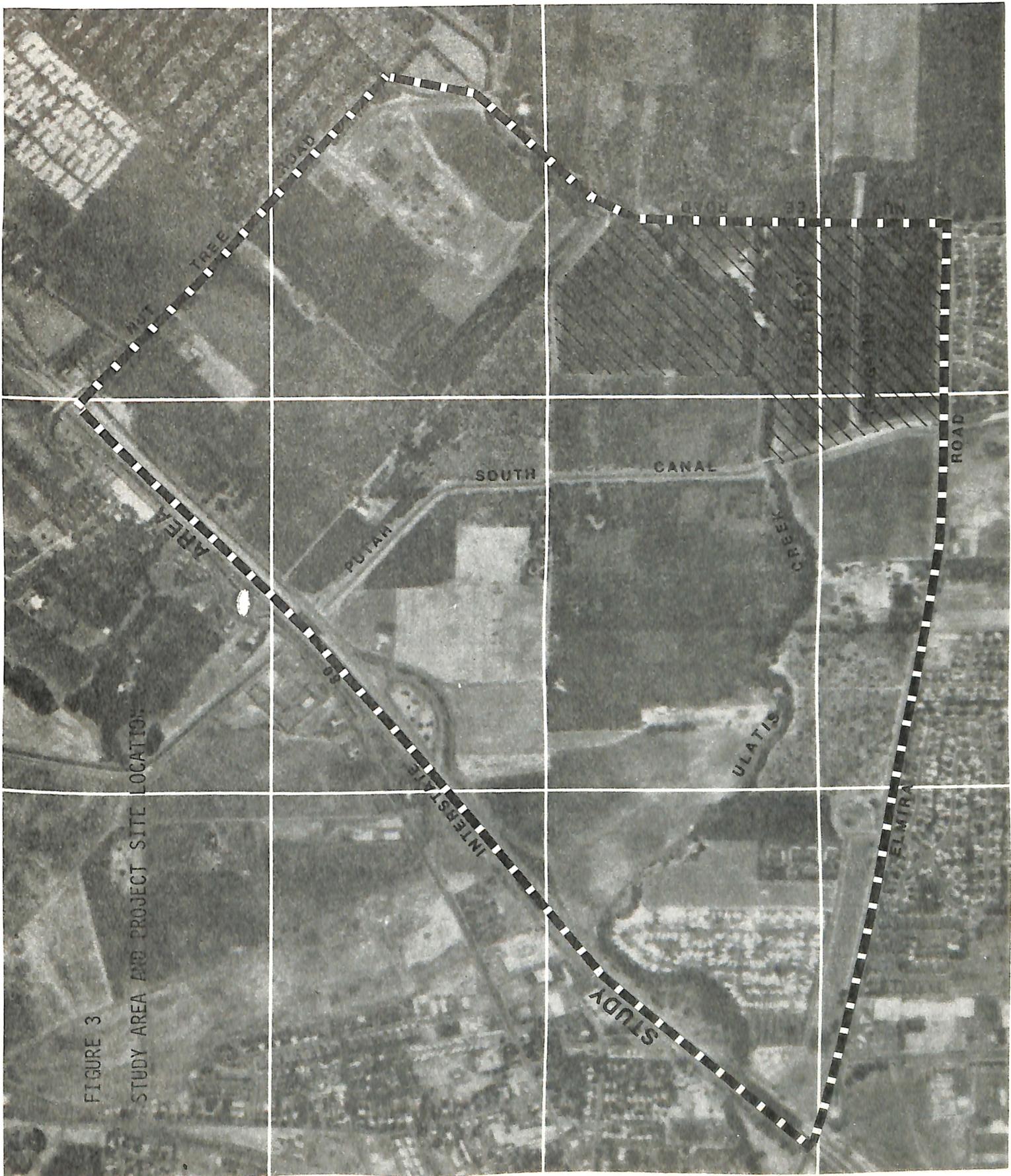
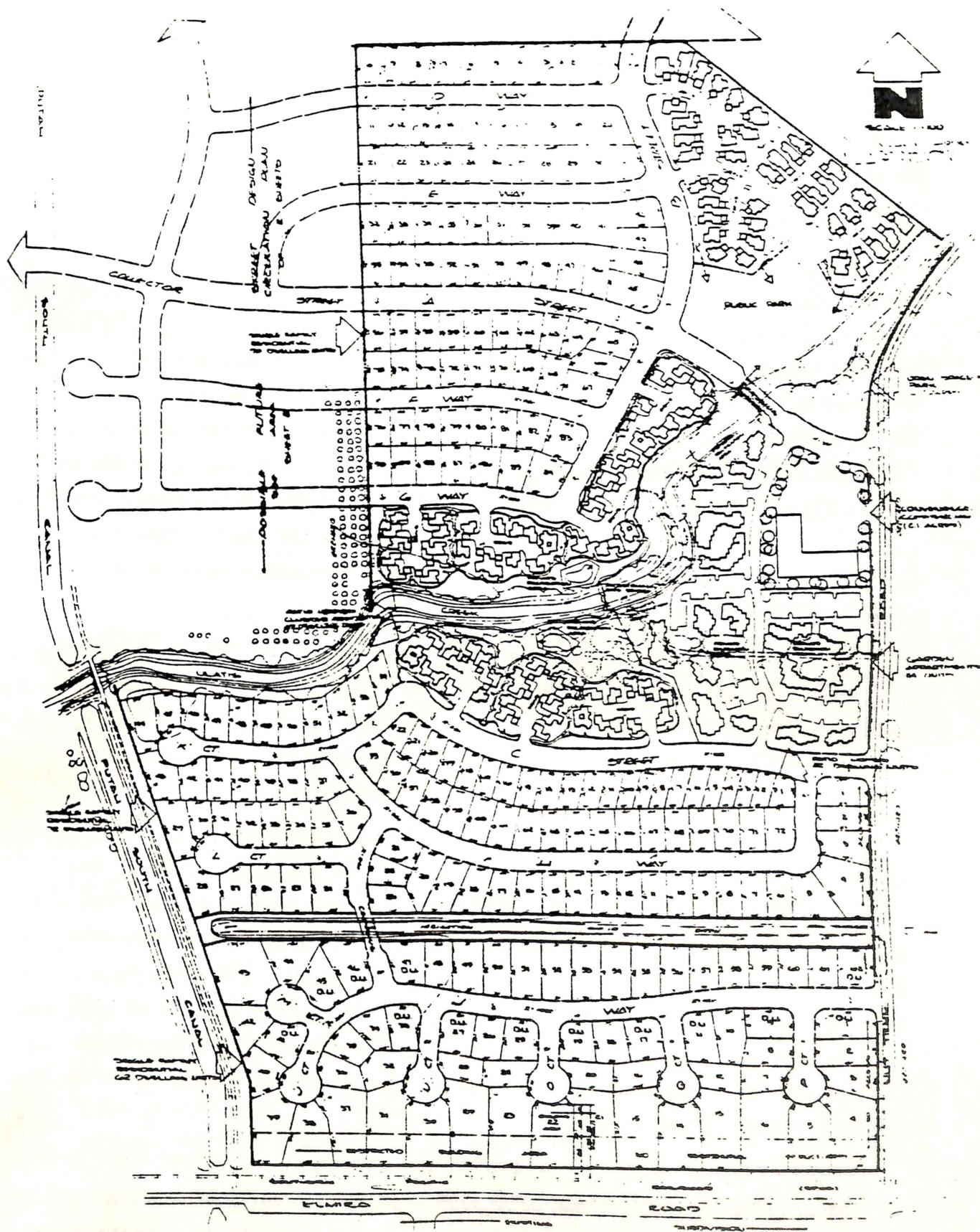


FIGURE 3
STUDY AREA AND PROJECT SITE LOCATIONS



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CAL COM DEVELOPMENT PLAN

FIGURE 4

PROJECT DESCRIPTION

Cal Com Leasing and Development Company proposes the annexation of 88+ acres of land into the City of Vacaville. Along with the annexation request Cal Com has submitted a development plan for the project site (Figure 4). Land uses proposed in the development plan include 2.1 acres of neighborhood commercial development, 26.1 acres of multi-family residential, 53.5 acres of single-family residential, and 6.2 acres of open space. The developer proposes to construct 224 single-family detached homes and 244 multi-family units. The high density cluster units would be located in the central to northern portion of the site along Ulatis Creek, and the majority of single-family detached homes would be on the southern half of the site, with the remainder proposed for the northwest portion of the property.

The City of Vacaville Fire Department is interested in relocating Station #2 to the southeast corner of the project site. The station would be located on a 1.4-acre parcel of land at the intersection of Elmira and Nut Tree Roads. The construction of the fire station would reduce the number of single-family home lots to approximately 214.

Access to the project site is limited to Nut Tree Road; no access would be provided from Elmira Road. All of the proposed roadways and drives within the development would be either cul-de-sac or dead end. A proposed bridge across the existing drainage ditch on the southern half of the site would loop the two proposed access streets. Likewise, access to the proposed residences at the northern end of the site would be provided by a bridge across Ulatis Creek. It is anticipated by the applicant (Cal Com) that future development would provide additional access roads to the northern half of the site.

The City of Vacaville Planning Department is concerned that approval of the annexation request would create a pocket of unincorporated land between the project site and Highway 80, and would result in increased pressure

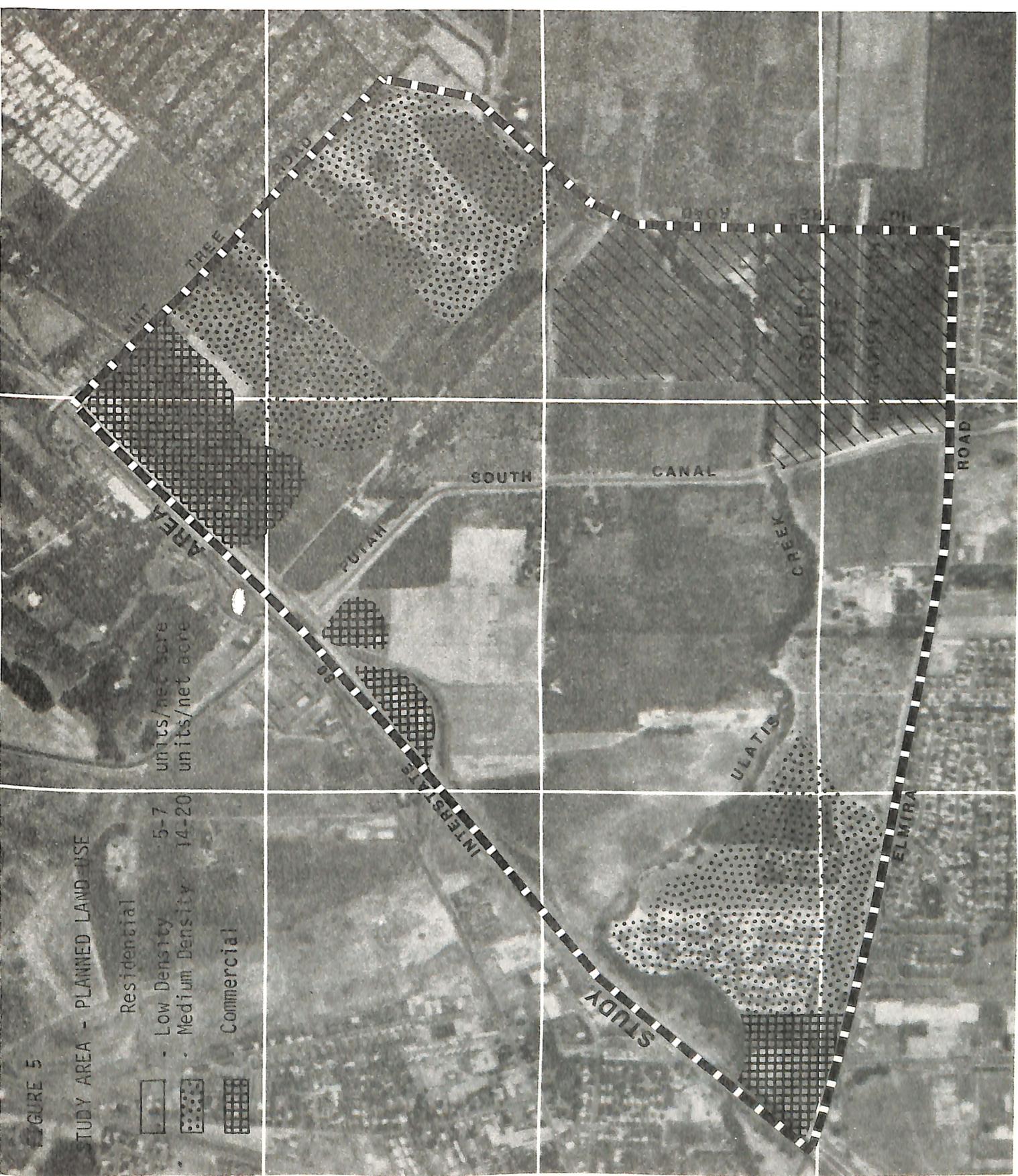
for future annexation and development of this remaining pocket. Because of the regional growth issues associated with this project, the Vacaville Planning Department requested that this Environmental Impact Report consider qualitatively the impacts of development of the entire 700-acre study area.^{1/}

In order to consider the impacts of development of the entire study area, it was necessary to develop a growth scenario for the region. The adopted Vacaville General Plan shows a mixture of land uses in the study area (Figure 5). These areas include service commercial development along Highway 80 at its intersection with Elmira Road (17.5 acres), with Monte Vista Avenue (7.3 acres) and with Nut Tree Road (28 acres). The rest of the area would be developed with a mixture of low density residences (136.9 acres). It was assumed that the low density areas would develop at an average of 6 dwelling units per net acre, and medium density areas at 12 dwelling units per net acre.^{2/} The following table shows the land use and population projections for the study area.

<u>Land Use</u>	<u>Gross Acres</u>	<u>Net Acres</u>	<u>Units/ Net Ac.</u>	<u>Total Units</u>	<u>Pop/ Unit</u>	<u>Total Pop.</u>
Service Commercial	52.8	-	-	-	-	-
Low Density Res.	427.6	321*	6	1,924	3.19	6,138
Medium Density Res.	136.9	96**	12	1,152	2.35	2,707
Ulatis Creek Environ	40.2	-	-	-	-	-
Water Treatment Plant	12	-	-	-	-	-
Putah South Canal	18.5	-	-	-	-	-
Southern Pacific R.R.	12	-	-	-	-	-

* Assumes a 25% reduction for streets, easements, etc.

** Assumes a 30% reduction for streets, easements, etc.



For the purposes of this report it was assumed that the study area could contain 3,076 dwelling units with a population of 8,845. These figures include the proposed project.^{3/}

References Cited:

- 1/ Chet Wystepk, Associate Planner, City of Vacaville. Personal interview, October, 1978.
- 2/ Chet Wystepk, op. cit.
- 3/ All figures, calculations, and conclusions were developed in direct consultation with Chet Wystepk, Associate Planner, Vacaville Planning Department.

PUBLIC AGENCY REVIEW

COUNTY OF SOLANO

A majority of the land in the study area, including the project site, is presently unincorporated and under Solano County's jurisdiction. These unincorporated lands are presently zoned A-40 (40 acre minimum lot size). The county uses this zone as a holding zone for lands which are expected to convert to urban uses by the year 2000.

The county has adopted an unwritten policy of allowing small pockets of unincorporated land to be annexed by the cities if they are shown as appropriate for urban use on their long range plans. In the Vacaville area, Solano County is interested in directing growth pressures away from the eastern side of I-80 because of the abundance of prime agricultural land. The county is encouraging the city to grow north into the Browns Valley Area.^{1/}

SOLANO COUNTY LOCAL AGENCY FORMATION COMMISSION

The Local Agency Formation Commission is responsible for approving or denying the annexation request. In discussing the project with a representative of the commission ^{2/}, it was found that the project site and the study area are within Vacaville's sphere-of-influence. In making their decision on the annexation request, however, the commission must consider the effect of the proposal on maintaining the physical and economic integrity of lands in an agricultural preserve in open space uses.^{3/} The commission must also consider whether the proposal will create islands or corridors of unincorporated territory.^{4/}

The proposed annexation could indirectly affect the integrity of existing agricultural preserves to the west ^{5/} and would result in creating an island of unincorporated territory to the west.

The California Government Code reads: "In reviewing proposals which could reasonably be expected to lead to the conversion of existing open space lands to uses other than open space,

the commission must consider whether the development or use of land for other than open space uses shall be guided away from existing prime agricultural lands in open space use toward areas containing non-prime agricultural lands, unless such an action would not promote the planned, orderly, efficient development of the area.^{6/} Furthermore, the commission must consider whether there is existing vacant or non-prime agricultural lands for urban uses within Vacaville's existing jurisdiction or within its sphere-of-influence. Development of these lands should be encouraged before any approval is given that would allow development of existing open space lands outside of Vacaville's present jurisdiction.^{7/}

SOLANO COUNTY IRRIGATION DISTRICT

The project site and portions of the study area are presently within the boundaries of the Solano County Irrigation District. The district has an informal policy of objecting to the annexation of prime agricultural land, especially when there is vacant land available for development within a jurisdiction's existing city limits. If the subject property were annexed to Vacaville for residential development, it would revert to the City and would be detached from the district's tax base. Consequently, the district will require a detachment fee of 62% of the assessed value which will be burdened by the developer. The detachment fee is levied so that the district can purchase other land to pay off the existing capital debt of the district.^{8/}

References Cited:

- 1/ Timothy Calkins, Planner I, Solano County Planning Department, Personal Interview, November 14, 1978.
- 2/ Michael Harrold, Senior Planner, Solano County Planning Department, Personal Interview, November 14, 1978.
- 3/ California Government Code. Section 54796 (e).
- 4/ California Government Code. Section 54796 (f).
- 5/ Agricultural Contract Numbers 879-898.
- 6/ California Government Code. Section 54790.2(a).
- 7/ California Government Code. Section 54790.2(b).
- 8/ Darrell Rosenkild, Assistant District Engineer, Solano Irrigation District, Telephone Interview, November 27, 1978.

LAND USE AND PLANS / GROWTH MANAGEMENT

EXISTING LAND USE

The study area is relatively flat, and is overlain by prime agricultural soils. Consequently, most of the land in the area is used for agriculture. At present the area consists of a mixture of orchards, which include stone fruits and walnut, and fallow fields. There is some production of hay, and the hilly area adjacent to I-80 and north of Ulatis Creek is covered by grassland.

There are, however, some urban uses within the corporate limits of Vacaville. All of the urban uses are located at the southwest end of the study area, along Elmira Road. These uses include a mobile home park, some townhouses, a few warehouses, and Vacaville's water treatment plant.

PLANNED LAND USE

Solano County recognizes the Vacaville General Plan as the land use guide for the study area.^{1/} The Solano County Plan shows a mixture of planned land uses in the area. These uses include commercial in the vicinity of the Elmira, Monte Vista, and Nut Tree interchanges along I-80. The other planned uses include medium and low density residential development. Medium density residential development would allow a density range of 15-22 dwelling units per net residential acre, and low density would allow development at 5-7 dwelling units per net residential acre. Besides the commercial and residential uses, the plan shows a linear creekside park paralleling both Ulatis Creek and Putah South Canal. There are also two community-, or neighborhood-, type parks shown on the plan. The only other use shown on the plan is the maintenance of the existing water treatment plant. (See Figure 5).

The only difference between the Solano County Plan and the updated Vacaville General Plan is an area of medium density residential development located on Nut Tree Road at the east end of the study area. Both plans, however, show the project site as a low-density residential area.

While the long-range plans for the study area and the project site call for a conversion from the existing agricultural uses to urban uses, the plan, in addition to Vacaville's adopted Growth Management System, contains policies and direction that regulate the rate and timing of this conversion. The Vacaville General Plan contains a number of planning goals and policies which relate to the development and conservation of lands within its jurisdiction. A review of the plan revealed that not all of the policies directly affect the study area, project site, and their planned uses. But there are some policies that appear to relate directly to the proposed development and the eventual development of the study area.

Vacaville has adopted the goals of conserving the natural resources of the City and its environs, while providing a wide choice of living and employment opportunities. To achieve these goals, the City will be guided in its development decisions by policies to make a maximum effort to preserve prime agricultural land, especially lands that are under agricultural preserve. As stated earlier, the study area is overlain with prime agricultural soils; two of the parcels in the area (67.85 acres), but not the project site, are under agricultural preserve contracts.^{2/}

The City's policies toward development encourage projects that provide a net benefit to the entire city rather than promote growth for growth's sake. Developments that seem to offer net benefits include those that conserve existing trees and terrain, preserve structures of historic or aesthetic significance, and promote clustering to increase open space and outdoor living areas. While the proposed Cal Com Development Project would impact trees and historic structures, it would allow a portion of

the site to be developed in a higher net density cluster.

VACAVILLE GROWTH MANAGEMENT SYSTEM^{3/}

The rate and volume of residential construction in Vacaville has more than doubled from the 1960's to the 1970's. This growth has put substantial pressure on the City's utilities (water and sewer), as well as its services (police and fire). Similarly, the Vacaville Unified School District has most of its schools filled to or exceeding their capacities. In order to more effectively deal with these secondary effects of growth the City adopted a growth management system. The purpose of the growth management system is to control the rate and location of growth, and to encourage new residential construction that implements the objectives of Vacaville's adopted General Plan. It is the intent of the City to use the system to protect prime agricultural land, to encourage in-filling of vacant parcels within its present boundaries before approving any new annexations, and to maintain and improve the economic base of the City. Furthermore, through this management system, the City is encouraging new developments that provide parks, conserve creeks and open space, and provide new low and moderate income dwelling units.

Annexation and development of the 88-acre project site appears to be contrary to the intent of Vacaville's growth management system. It is the city's intent to use the system to protect prime agricultural lands, yet development of the project site would mean the long term loss of Class 1 prime agricultural soils from crop production. Furthermore, the growth management system is to be used to encourage infilling before there is annexation of new development areas. It is estimated that there is enough vacant land, at present, within the city's corporate limits to accomodate an additional 10,009 single-family homes and 4,120 multi-family units.^{4/} The projected residential unit requirement for Vacaville through 1988 is 7,866 single-family units and 1,669 multi-family units.^{5/} Therefore, the city has enough vacant land within its present corporate limits to accomodate new residential development through the year 1988 and beyond. Annexation of the project site would open up another development center

when the city already has large acreages committed to future development through previous annexations, zoning and prior development approvals.

The Vacaville City Council annually adopts a construction quota for the coming year, and sets tentative quotas for the next five years. At the same time, the council sets criteria used to distribute the allotments. This criteria could change annually, depending upon the types of construction built in the past, and the projected needs and desires of the City. Once this has been accomplished, the council sets a closing date for receipt of applications.

The applicant (Cal Com Leasing and Development Company) is hoping to meet the application deadline for the coming year's allotments. The deadline date has not been set yet, but is expected to be sometime in late February or early March 1979.^{6/} In order to be considered for an allotment, Cal Com must receive environmental clearance, and have the annexation approved and property prezoned to allow for the proposed development plan. Subsequently, the proposed Cal Com Development and any other development proposal is reviewed to determine conformance with the criteria for an allotment consideration.

The review process in 1978 consisted of two stages. In Stage 1, the City does an analysis of the proposal to determine if the various departments and agencies that will serve the project have the necessary capacity to accommodate the project. If the capacity does not presently exist, a determination is made as to whether an extension or expansion is included in the City's and school districts' program so that the necessary capacity will be available when needed. The socioeconomic section of this draft EIR provides some of the information necessary to make this determination for the proposed Cal Com Development.

If a positive finding is made in the Stage 1 review, the development proposal then moves to Stage II. In this second stage, the applicant in 1978 had to receive a minimum of 105 points to be authorized for consideration in the distribution of the allotments. The City will review the proposal for its design quality, the housing objectives it will achieve, its contribution of aesthetic amenities, and the conservation goals it will implement.

References Cited:

- 1/ Timothy Calkins, Advanced Planner, Solano County. Personal interview, November 14, 1978.
- 2/ The Agricultural Preserve Contract numbers are 879 and 898.
- 3/ Williams, Platzek & Mocine, A Growth Management System for Vacaville, California, July 1977.
- 4/ Sedway/Cooke, Analysis of Future Land Requirements and Existing Land Use Policy.. Oct. 30, 1978. Pg. 32, Table 23.
- 5/ Sedway/Cooke, Analysis of Future Land Requirements and Existing Land Use Policy, Oct. 30, 1978. Pg. 4, Table 2.
- 6/ Chet Wysteppek, Associate Planner, City of Vacaville, personal interview, November 9, 1978.

CLIMATE AND AIR QUALITY

SETTING

CLIMATE

Solano County is influenced by the "mediterranean-type" climatic conditions generally associated with the San Francisco Bay Area. The funneling effect of the San Francisco Bay inlet and Carquinez Strait play an important role in Solano County wind patterns and resulting air quality. The dominating and moderating presence of the Pacific Ocean results in typically warm, dry summers and mild, wet winters. During the summer season the Pacific High Pressure System forms off the California Coast and has sufficient strength to deflect oncoming storm (low pressure) systems northward. In the winter season, this high pressure system migrates southward and diminishes in strength so that an increasing number of storm systems are able to penetrate Northern and Central California.

The City of Vacaville lies generally in the path of the prevailing west-southwest winds that direct marine air through the Carquinez Strait from San Francisco Bay. Records at nearby Travis Air Force Base indicate that the wind in Vacaville arrives from the southwest quadrant approximately two-thirds of the time.^{1/} Vacaville's climate is influenced considerably by this wind, which tends to lower summer night temperatures as well as contribute to below-freezing readings about 32 days a year. The mean July temperature in Vacaville of about 76° F represents considerable daily fluctuation. The January monthly mean is near 45° F. Mean annual precipitation is about 25 inches.

The 700 acre study area is currently in agricultural production. Intensive row crops and orchards are the predominant land use. The project site itself is situated near the geographical center of the Vacaville Planning Area.

AIR QUALITY

Man-made air pollutants generally arise from a variety of mobile and stationary sources, including motor vehicles, industrial facilities, and agricultural activities. Principal air pollutants currently regulated under federal and state standards are carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and suspended particulates. The most intense generator of CO in the Vacaville Planning Area is motor vehicle traffic along I-80 west of the I-505 intersection. Recent calculations have determined that this line source, extending about 100 feet from either side of the freeway, currently exceeds 8-hour CO standards and is likely to remain close to maximum limits into 1986.^{2/}

Motor vehicle operation is also a principal source of HC and NO_x emissions, which are the main chemical constituents in the formation of photochemical oxidants. Concentrations of these pollutants in the Vacaville Planning Area are currently well below state and federal standards. Agricultural activities, such as plowing and burning, are prime contributors of particulate emissions in the Vacaville area. SO_2 , principally emitted by certain industrial facilities, is not an important component of Vacaville air quality. In 1976, a year of unusual meteorological conditions, the Vacaville air quality test station reported no violations of federal or state CO, HC, or NO_x standards.^{3/} The annual geometric mean for suspended particulates in Vacaville for 1976 slightly exceeded California ambient air quality standards.

In order to monitor and control air quality in California, the state has been divided into 13 regional basins that represent areas of similar meteorological conditions.^{4/} The City of Vacaville lies within the Sacramento Valley Air Basin near its western border with the San Francisco Bay Area Air Basin. Individual air basins are typically subdivided further into air pollution control districts. The northeastern portion of Solano County, which includes the Vacaville Planning area, is in the Yolo-Solano Air Pollution Control District.

Vacaville is also part of the Sacramento Air Quality Maintenance Area (AQMA), which incorporates Sacramento and Yolo counties as well as portions of Placer and Solano counties. The Sacramento Regional Area Planning Commission has recently coordinated the preparation of a draft Air Quality Plan for the Sacramento AQMA which recommends a series of programs that would reduce oxidant and carbon monoxide levels to the national standards by no later than December 31, 1987. The final plan will be submitted to the State Air Resources Board and the U.S. Environmental Protection Agency in January, 1979.

IMPACTS

Study Area

- Construction-related air emission problems would involve HC and CO emissions from construction equipment and increases in particulate generation during grading and excavation activities.
- Motor vehicle traffic generated by occupied residences and operating commercial establishments would be the principal source of air pollutants in the study area. Approximately 393,925 daily vehicle miles (DVM) is predicted to be generated by the study area in 1995, the year buildout is estimated at completion. Included in this figure are project site traffic generation and commercial development, which is projected to total 53 acres of the study area. Traffic emissions associated with complete buildout of the study area would contribute approximately 1 percent of the total CO, HC, and NO_x emissions projected for the Sacramento AQMA in 1995 (Table 2).

Thus, air quality impacts on the Sacramento Valley Air Basin associated with the projected residential and commercial buildout of the 700-acre study area would probably be minor.

Project Site

- Similar to the study area construction phase, HC and CO emissions would occur from construction equipment and particulate generation would increase locally during grading and excavation. These impacts, though, would be both minor and short-term.
- By full project development projected for 1985, motor vehicle traffic generated by the occupied residences would be the major source of air pollutants. Based on currently accepted trip-end generation factors associated with typical residential and commercial development in the area (see Traffic section), an estimated 21,000 DVM would be generated by the project site. The CO, HC, and NO_x emissions resulting from this additional vehicle traffic would not significantly contribute to the total projected Sacramento AQMA pollutant emissions in 1985 (Table 3). Therefore, air quality impacts on the Sacramento Valley Air Basin associated with residential development of the 88-acre project would be minimal.

MITIGATIONS

Project Site and Study Area

Construction-related impacts would be best mitigated by using efficient, low emission construction equipment if available, and maintaining such equipment at optimal performance levels. Wetting-down or covering of excavated or graded areas, particularly during periods of high winds, would greatly reduce particulate emissions.

A reduction in vehicle mileage traveled and consequently in air pollutant emissions as a result of this development could be best achieved by maximizing pedestrian/bicycle and public transportation options. This

TABLE 2

1995 ESTIMATED TRAFFIC EMISSIONS FROM STUDY AREA**
 AND % CONTRIBUTION TO AIR BASIN (Kgs/day)

	<u>CO</u>	<u>HC</u>	<u>NO_x</u>
Study Area	2379.8	352.7	617.2
Sacramento AQMA**	242,744	48,738	53,427
% Contribution	1.0	.72	1.2

TABLE 3

1985 ESTIMATED TRAFFIC EMISSIONS FROM PROJECT SITE*
 AND % CONTRIBUTION TO AIR BASIN (Kgs/day)

	<u>CO</u>	<u>HC</u>	<u>NO_x</u>
Project Site	189.0	29.4	44.3
Sacramento AQMA**	287,499	52,515	62,445
% Contribution	.07	.06	.07

* For project site and study area emission calculations, assume more stringent federal emission standards which would be applicable by this time, and correct for a 25 mph average speed. 5/

**Projected numbers represent an average of the median ranges of four possible scenarios identified by the Sacramento Regional Area Planning Commission. 6/

+ Uses 1990 average vehicle emission factor estimates to calculate study area traffic emission. 7/

would require construction and designation of bike and/or pedestrian pathways throughout the project site as well as a connecting pathway or right-of-way to the central Vacaville commercial district. The flat terrain in Vacaville is especially conducive to bicycle transportation. Public transportation should be provided by expanding the existing mini-bus shuttle service to include the proposed Cal Com development. An appropriate area along Elmira Road should be designated for construction of a shuttle bus stop.

References Cited:

- 1/ Final EIR No. EIR-2-77 on the Water System Master Plan, Public Works Department, City of Vacaville, July, 1977, City of Vacaville.
- 2/ Ibid
- 3/ Ibid
- 4/ Solano County Transportation Study
- 5/ Guidelines for Air Quality Impact Analysis of Projects, BAAPCD, June, 1975.
- 6/ Draft Air Quality Plan, Sacramento Regional Area Planning Commission, October, 1978.
- 7/ Guidelines for Air Quality, op. cit.

GEOLOGY AND SOILS

SETTING

GEOLOGY

Located southeast of the English Hills, the topography of the study area is generally flat with low-lying elevation ranging from 102 to 139 feet, and includes portions of a northwest-southeast trending ridge which elevation peaks at 200+ feet. The project site is located in the low lying elevations of the study area (108-120 elevation feet).

Figure 6 indicates that the study area is comprised of two geographic units.^{1/} The lower elevations (including the project site) are composed of Quarternary alluvium (Qal) and the higher elevations are composed of Upper Pliocene nonmarine (Puc).

Quarternary alluvium (Qal) consists of recent and older flood-plain and alluvial-fan deposits. These materials are interstratified clay, silt, sand and gravel. Beneath these are coarser materials which are aquifers, yielding water to many irrigation wells for farming purposes.

The Upper Pliocene nonmarine (Puc) sedimentary rock located on the ridge is associated with the Tertiary period (from 3 million to 65 million years ago).

SEISMICITY

There are no known faults on the project site nor on the study area. Figure 7 indicates that the study area lies between the Midland fault zone and the Kirby Hills fault. The activity of the Midland fault is not known but, according to the Solano County Transportation Study (August, 1978), the Midland fault could possibly be active. The Kirby Hills fault lying approximately 2.5 miles west of the project area has been mapped as a concealed, deep-seated fault by the California State Division of Mines and Geology and is considered inactive.^{2/}

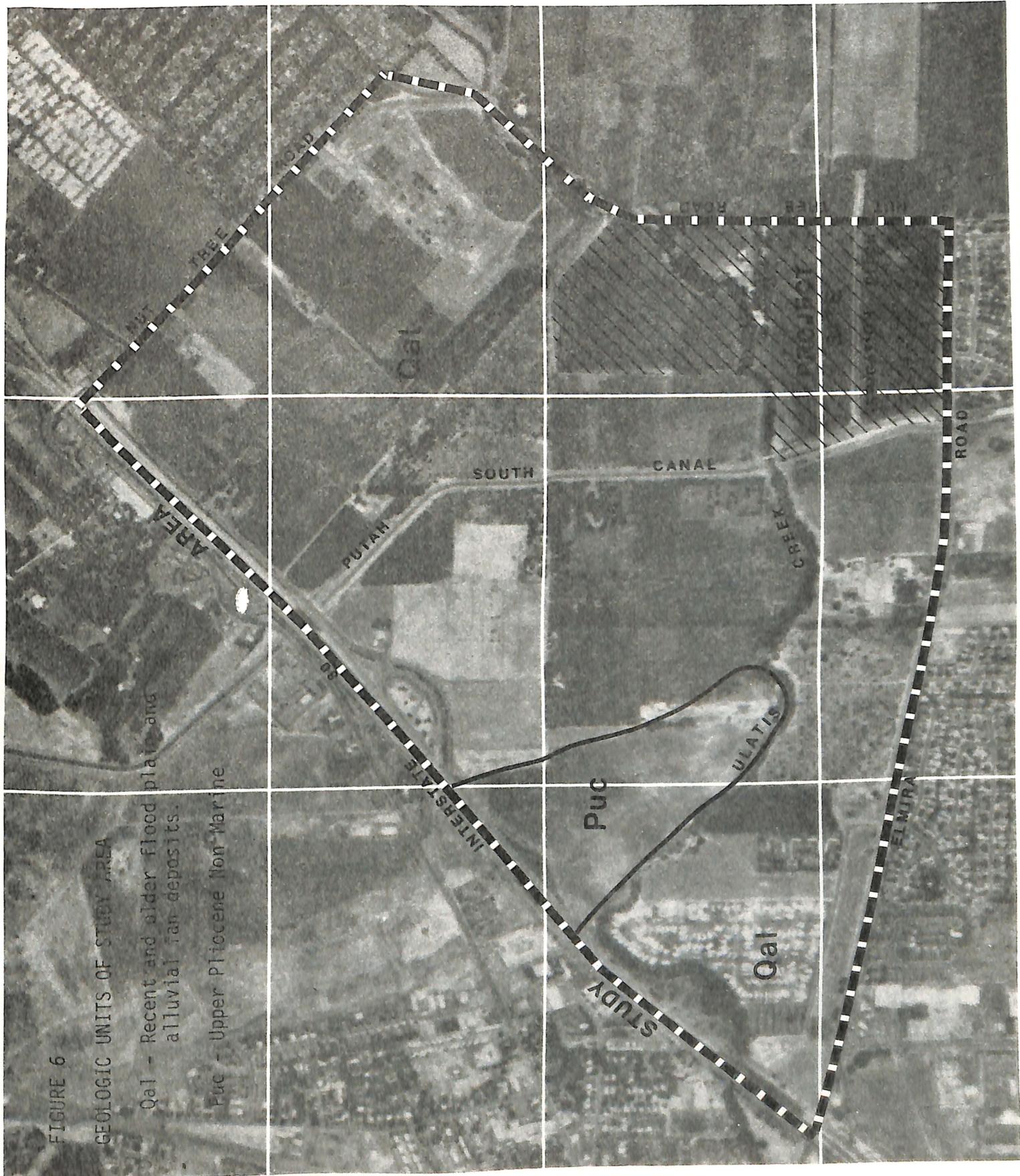
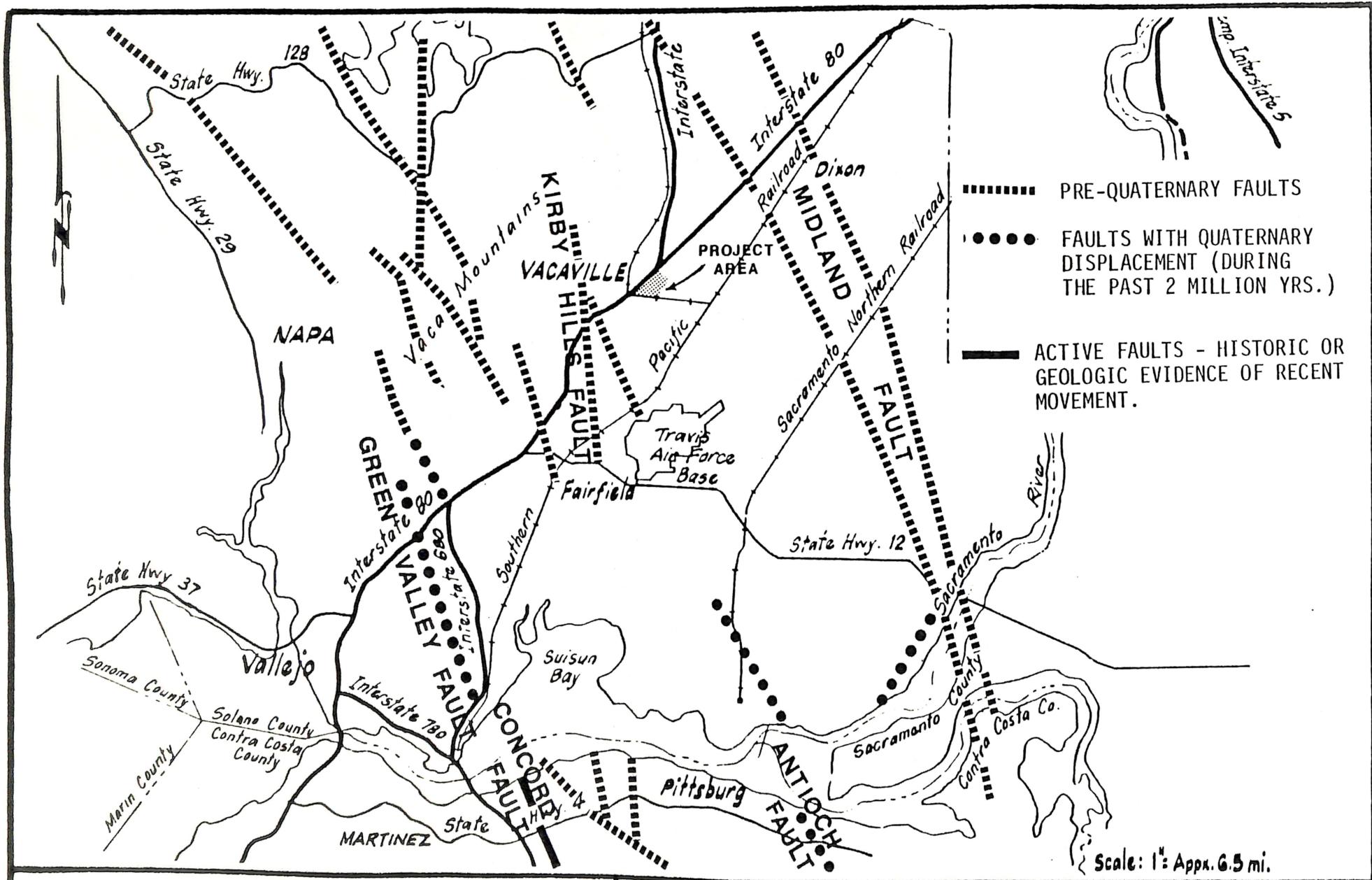


FIGURE 6

GEOLOGIC UNITS OF STUDY AREA

Qal - Recent and older flood plain and alluvial fan deposits.

Puc - Upper Pliocene Non-Marine



MADRONE ASSOCIATES

PO BOX 2970 • SAN RAFAEL, CALIFORNIA 94902

FAULT MAP

FIGURE
7

The closest active fault in the Vacaville area is the Green Valley Fault, which is located 14 miles from the study area. Recent movement has been detected along its trace. If displacement along the fault of up to two and a half (2-1/2) feet occurs, it could produce an earthquake of magnitude 6.2 on the Richter scale. The Concord fault located south of the Green Valley fault has exhibited recent lateral movement and is capable of producing a maximum probable earthquake of magnitude 6+.

SOILS 3/

The seven soil units present in the study area are shown on Figure 8.

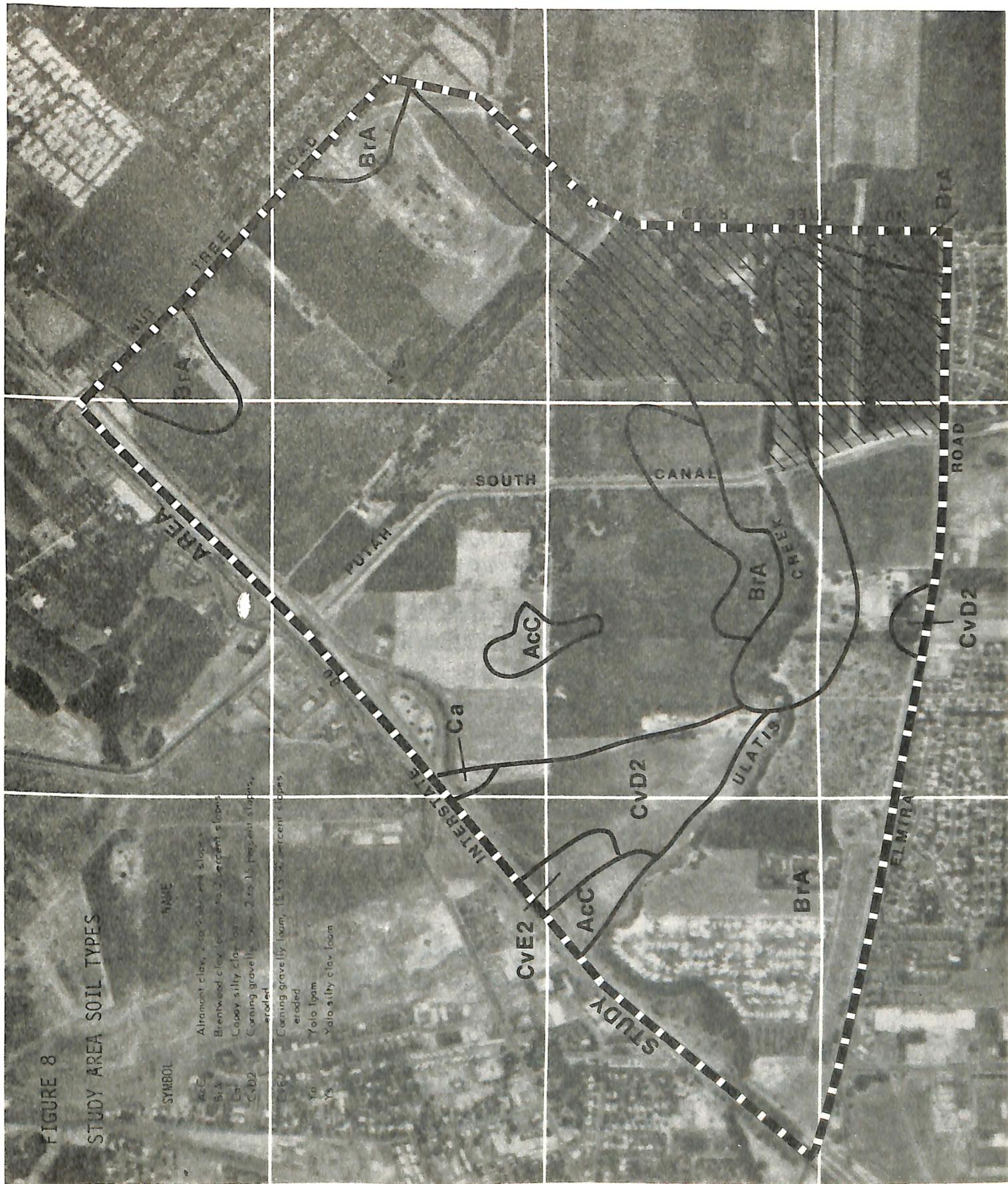
Yolo silty clay loam (Ys) This soil unit composes approximately half of the study area. Formed in mixed alluvium derived from sedimentary rocks, the Yolo series consists of nearly level, well-drained soils of alluvial fans. Permeability is moderately slow, runoff is slow and erosion is minimal. As a Class I soil, it can be used for planting common field crops.

Yolo loam (Yo) This soil unit has the profile representative of the Yolo series, except that it has a loam texture throughout. Permeability is moderate. Runoff is slow and erosion is minimal.

Brentwood clay loam (BrA) The Brentwood series consists of well-drained soils on alluvial fans. These soils formed in materials derived from sedimentary rocks. Subsoil permeability is moderately slow. There is no erosion hazard and runoff is slow. The shrink-swell potential of the Brentwood clay loam is high. This characteristic can cause foundation failure if the structure is not properly designed. BrA is a Class I soil.

Corning gravelly loam 2 to 15 percent slopes (CvD2) The Corning series consists of well-drained soils on dissected terraces of softly consolidated, mixed, gravelly alluvium. This soil is undulating to rolling

FIGURE 8
STUDY AREA SOIL TYPES



on terraces. Runoff is medium and there is moderate erosion associated with this soil. This is a Class IV soil, meaning that there are severe limitations which reduce the choice of crops that can be planted.

Corning gravelly loam, 15 to 30 percent slopes (CvE2) This soil is present in a very small portion of the study area. CvE2 is found on terraces. Runoff is rapid and moderate erosion is associated with this soil. It is a Class VI soil, generally unsuitable for cultivation and limited to pasture, range, woodland or wildlife habitat.

Capay silty clay loam (Ca) Another very small portion of the study area is composed of Ca. This is a fine to moderately textured soil. Subsoil permeability is slow, runoff is very slow, and natural drainage is moderately good. There is no erosion hazard but there is a high shrink-swell potential. It is a Class II soil which has some limitations that reduce the choice of crops or requires moderate conservation practices.

Altamont clay, 2 to 9 percent slopes (AcC) The Altamont series consists of well-drained soils underlain by siltstone at a depth of 25 to 40 inches. These soils are on dissected terraces. Surface runoff is slow to medium and there is minimal erosion. This soil is Class III, having severe limitations that reduce the choice of plants and requires special conservation practices.

IMPACTS

GEOLOGIC AND SOILS CONSTRAINTS

The project site has a number of geologic and soils constraints which will ultimately influence any plan for development of the site. They include:

- Ground failure in terms of liquefaction may occur in the event of an earthquake due to the fact that the area is composed of prime agricultural soils with a high water table.^{4/}

- It is anticipated that the impacts from ground shaking would be minimal because of the distance of the study area from the active faults.
- Due to the high shrink-swell potential associated with some of the soil units of the project site and of the study area, there is a potential for minor subsidence.

MITIGATIONS

- A detailed soils investigation should be made of the site prior to Final Map approval. This investigation should include recommendations regarding site development and site preparation, structural engineering, drainage, etc.
- Underground utilities should be engineered such that possible subsidence and differential settlement is taken into consideration.

References Cited:

- 1/ Source: Final EIR on the Water System Master Plan, 1977 and Geologic Map of California. 1965 Sacramento Sheet.
- 2/ Final EIR Vacaville Southwest Sector, March 1978.
- 3/ Source: Soil Survey of Solano Co., Ca. Map 1977.
- 4/ Seismic and Geologic Hazards Map--Solano Co. Transportation Study, August, 1978.

SURFACE HYDROLOGY

SETTING

The Vacaville area has four streams, the drainage basins of which lie entirely in Solano County, generally northwest and west of Vacaville. Elevations in the stream basins range from approximately 2,800 feet in the headwater regions to about 100 feet in the lower regions.

The study area is traversed by one of the four streams, Ulatis Creek. This creek flows from the Vaca Mountains lying northwest of the Vacaville area and crosses the study area in a northwesterly direction. At a point just northeast of the project site Ulatis Creek has been improved to reduce flooding problems. (Refer to Figure 3). Ulatis Creek drains into the Sacramento River by way of Cache Slough. The Putah South Canal is another major hydrologic element within the study area. The canal runs southerly through the study area and forms the western border of the project site. Water is released from Lake Berryessa into Putah South Canal which is a major source of Vacaville's water supply. All the waters are treated by a 5 MGD (million gallons daily) diatomaceous earth filter treatment plant prior to distribution. This treatment plant is located in the southern portion of the study area to the west of the project site. An irrigation ditch traverses the lower portion of the project site in an east-west direction.

The flood season in Vacaville is during the period of heavy rainfall (normally from October through April).^{1/} When there are prolonged heavy rainstorms over the tributary areas, none of the stream channels are entirely capable of carrying the water flows. Contributing to the flooding hazards of the area are obstructions to flood flow; namely, vegetation in and along streams, floating debris, culverts, pipeline crossings and bridges.

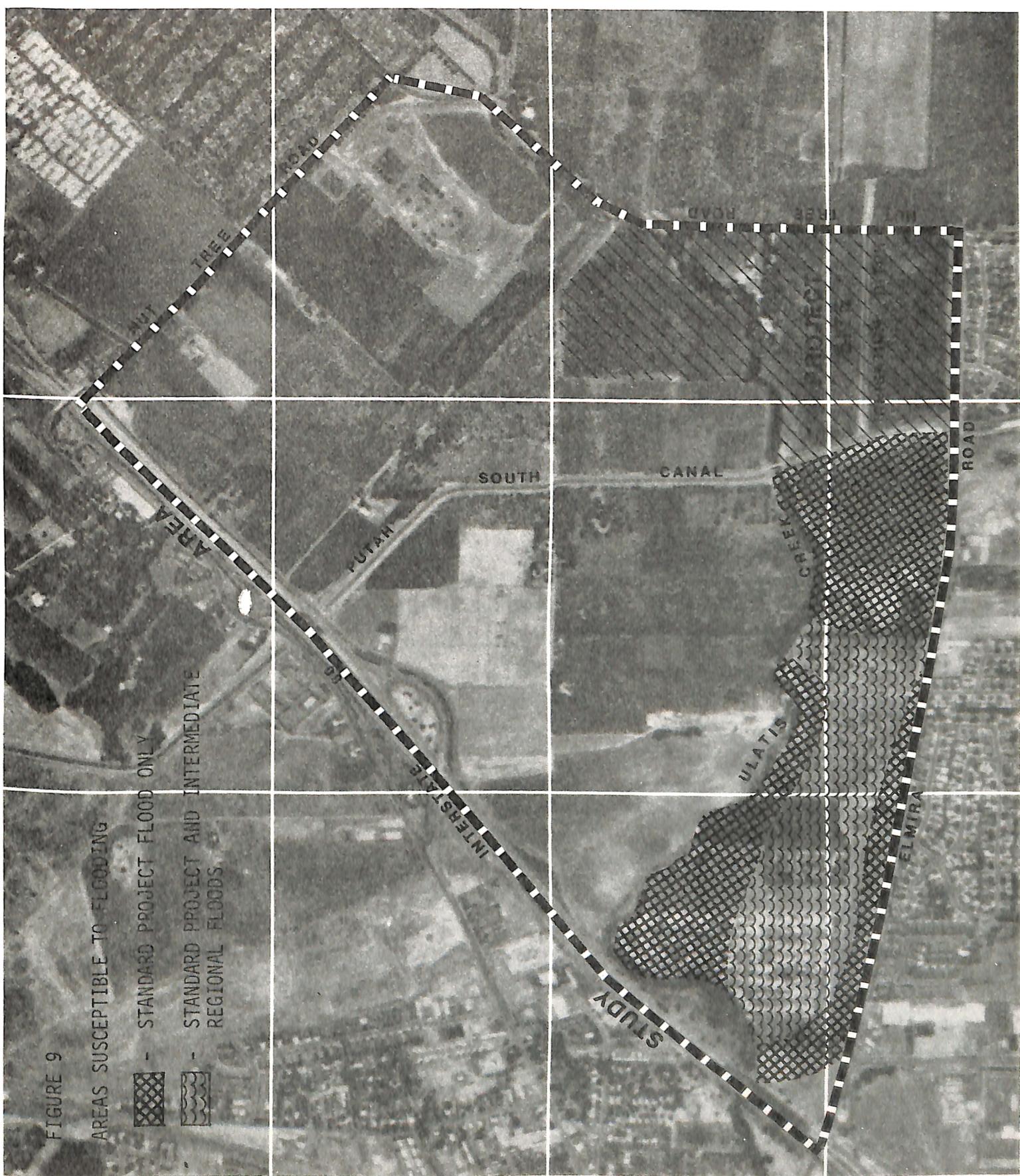
The Corps of Engineers has mapped potential floods designated as Intermediate Regional Flood and Standard Project Flood. The Intermediate Regional Flood is one that could be expected to occur once in 100 years on the average, although it could occur in any year. The Standard Project Flood is one that could be expected under the most severe combination of meteorological conditions reasonably characteristic of the geographical region. Figure 9 delineates the overflow limits to Ulatis Creek under Intermediate Regional Flood and Standard Project Flood conditions.^{2/} Note that in the event of either type of floods, the southwest portion of the study area would be subject to sheetflow flooding. A sheetflow flood is a broad and shallow overland flood varying from a few inches to not more than 2 feet deep. Under these flood conditions, floodwater from Ulatis Creek would flow easterly inundating agricultural and residential properties and the City water treatment plant. Special site preparations for proposed developments located in the sheetflood areas are required.

IMPACTS

- The construction of roads, driveways, sidewalks, and other improvements for the CAL-COM project, will create impervious surface area resulting in increased runoff from the site. In addition, dusts and sediments generated during the construction period may be discharged into the creek.
- After the construction period, the stream may receive oil, solid particles, and other waste materials associated with residential development. The change from agricultural to residential waste products the creek constitutes does not result in a significant impact. Further, since the surface drainage in the area flows into Ulatis Creek in a northerly direction, it is anticipated that the development of this site will have minimal impact upon the existing drainage pattern of this area.

MITIGATIONS

None.



References Cited:

- 1/ Flood Plain Information, Army Corps of Engineers, June 1973.
- 2/ Flood Plain Information, Army Corps of Engineers, Plate 12 Flood Profiles, June 1973. The streambed in the profile is at elevation 153 feet above mean sea level. The Intermediate Regional Flood level is shown as 12 feet above streambed, and the standard Project Flood is 15 feet above the streambed.

VEGETATION AND WILDLIFE

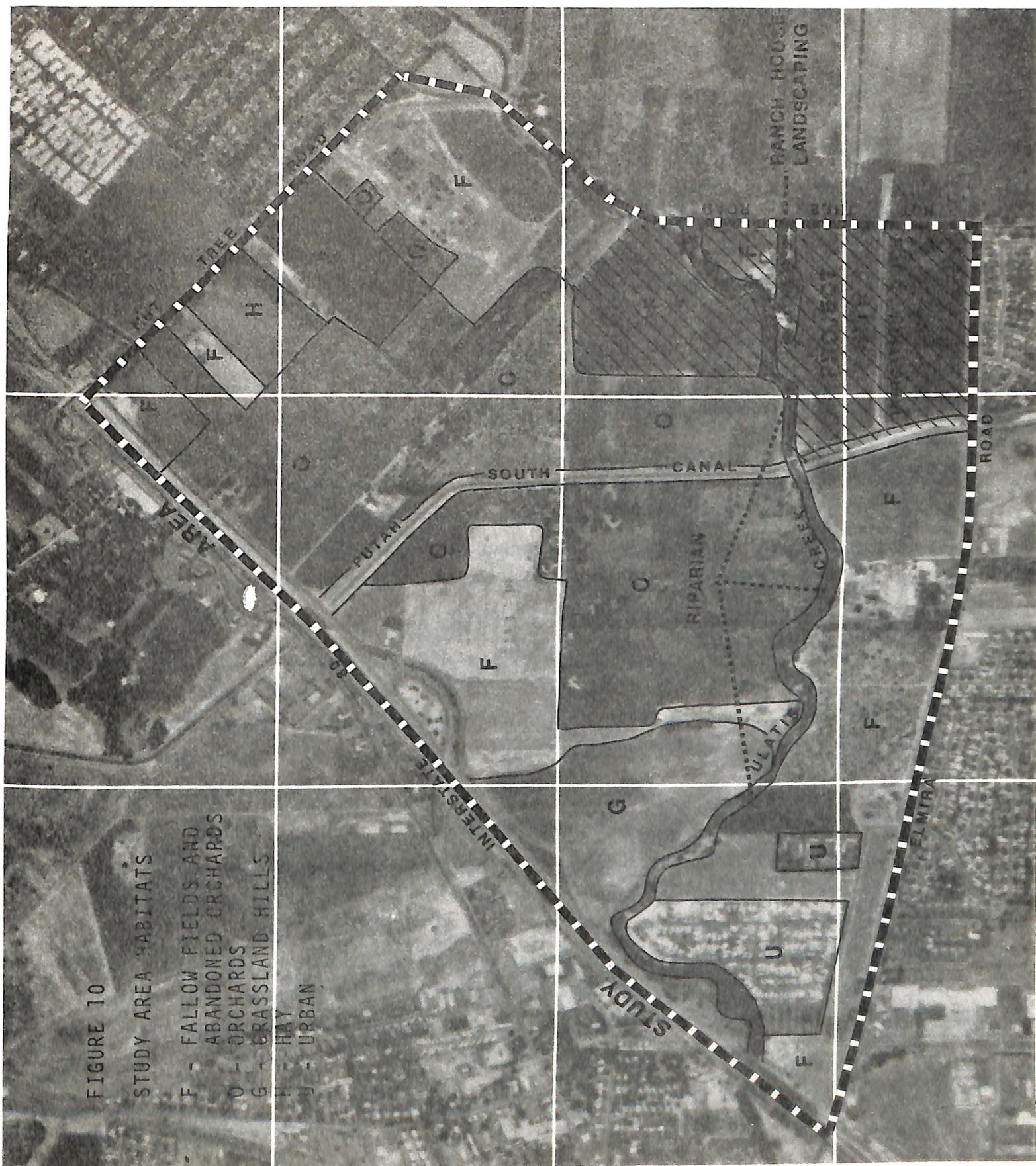
SETTING

STUDY AREA

The study area is flat or gently sloping, except for a low hill in the western side of the study area, and Ulatis Creek, a natural stream course which flows basically eastward across the area in a natural channel about twenty feet below main ground level. The area is a borderland between the former grassland of the valley, now largely usurped by agriculture, and the foothill woodland of the inner Coast Ranges to the west.

Soils are mainly Class II; which are suitable for cultivation with few or no limitations. The primary land use has been and continues to be orcharding. Orchards occupy about 40 percent of the study area; this was higher in the past but some orchards have been cleared and not replaced. The trees are primarily stone-fruits (apricots, cherries, peaches, plums, and almonds), but some walnut orchards, now derelict, are also present. The productive orchards are of varying ages, ranging from only a few years old to 25 or 30 years, at which age productivity begins to decline and the orchard is replaced. Other productive agricultural lands occupy about 5 percent of the study area. These include a tomato field and two irrigated pastures.

Most of the remainder of the study area is occupied by fallow fields, abandoned walnut orchards, including the project area, or new residential development. The fields were cultivated in the recent past, and although they are still fertile and could continue to be agriculturally productive, they now support a weed flora common to such sites. The most common plants of these fields now are prickly lettuce, yellow star thistle, pig-weeds, and a few grasses such as wild oats, bromes, and barleys. Vegetation features are delineated in Figure 10.



Two areas within the study area stand out as having natural qualities. These are Ulatis Creek, which crosses the study area from west to east, and the hill which lies to the northeast of a mobile home park. The creek flows all year in a normal season, but has been rather heavily impacted by the adjacent agricultural use, receiving much plant debris and other materials. It is an open stream, without the dense thickets of vegetation that would be expected. Valley oak, cottonwood, arroyo and yellow willows, and walnuts, are the most common trees. It should be noted that the walnut trees could possibly be native, although positive identification should be made in the spring. (See below). Other trees include buckeye, bigleaf maple and blue gum. The only common shrub is the California rose, which forms scattered thickets here and there along the streambank. Stream bottom vegetation is primarily herbaceous, and strongly influenced by agricultural surroundings. Common herbs include cattails, sedges, alfalfa, sweet clover, periwinkle, dock, and Johnson grass.

The hill has not been cultivated, but apparently has been occasionally grazed. There are no trees and the vegetation is dominated by exotic forbs and grasses. The thin rocky soil along the ridge of the hill supports remnant stands of perennial native grasses, mainly needlegrass and June grass. A few wildflower stalks exist, including mariposa lilies, lupines, and poppies.

Wildlife habitat value within the study area is limited. Ulatis Creek and its associated vegetation provides some cover and food sources for wildlife; however, clean cultivation and the generally low value of the fallow field weeds provide poor habitat away from the creek. Wildlife can be expected to be primarily those species adapted to agricultural situations, where grass or weeds are adequate cover. A list of vertebrates which may be expected here is included in Appendix A.

Juglans hindsii, Northern California black walnut, has been reported and mapped in the study area by the California Native Plant Society. It is considered to be a rare and endangered plant species.^{1/} Further investigation as to the actual location of these trees should be conducted in April and May during the flower period when the trees can be more readily identified.

No species of animal listed by the U.S. Fish and Wildlife Service or the California Department of Fish and Game as rare or endangered, is known to occur regularly in the vicinity.

PROJECT SITE

The project occupies the site of an old ranch west of Nut Tree Road. The property is mostly fallow field, but more diverse vegetation occurs along Ulatis Creek, which bisects the site and is described above, and around the ranch house. Valley oak and eucalyptus (two species) are the dominant trees, but willows, cottonwood, and some walnuts occur here also. The plantings around the ranch house are of special significance. Especially prominent are two huge valley oaks, each of which probably exceeds 200 years of age, standing on the north side of the house. The eucalyptus and larger conifers appear to be in the 60 - 80 year old range. All these trees are basically healthy, although one of the oaks lost a large branch some years ago. Other prominent plants around the house include walnut trees lining the driveway (some of which have been cut and the black walnut stock allowed to resprout), various conifers, several species of citrus, pomengranates, strawberry tree, olive, grape, and a handsome cycad (*Cycas revoluta*). No stone fruits occur as part of this home orchard. All of the plants are in good condition except for the oranges, which are in need of careful pruning to restore their health.

IMPACTS

- Eventual development of the study area will result in loss of agriculturally productive soils and habitat associated with agricultural lands.

- Urbanization of the study area will result in further damage to Ulatis Creek banks and riparian vegetation and habitat. This damage can be caused by direct encroachment by people and domestic animals, by dumping of garden and other debris, or by contamination from fertilizers, pesticides, and other pollutants typical of urban runoff.
- If additional flood control improvements to the creek become necessary to protect adjacent residential neighborhoods, not yet constructed, the mature riparian trees, including possible California walnuts, may be removed or damaged through bank construction, stream bed alterations, or change in water regime for roots.
- If widening of Nut Tree Road is required by the project, mature walnut trees lining portions of the road might be destroyed.
- Removal of the walnut trees could possibly include the native Northern California black walnut listed as a rare and endangered species.
- Without careful site planning and performance control during site preparation, the diverse non-native trees on the farmhouse grounds could be destroyed or damaged.

MITIGATIONS

- Consideration should be given to retaining the gardens surrounding the old ranch house for their aesthetic, horticultural and historical value.
- The mature trees located on the project site are all in good health and should be preserved to the fullest extent.
- Development should be set back a minimum of 50 feet from the top of the banks of Ulatis Creek to preserve the integrity of the riparian zone and minimize danger from bank slippage during flood flows.

- The developer should enhance the natural and aesthetic values of the creek environs with introduced native plants.

References Cited:

- 1/ Powell, W. Robert, Inventory of Rare and Endangered Vascular Plants of California, California Native Plant Society, 1974.

HISTORY AND ARCHAEOLOGY

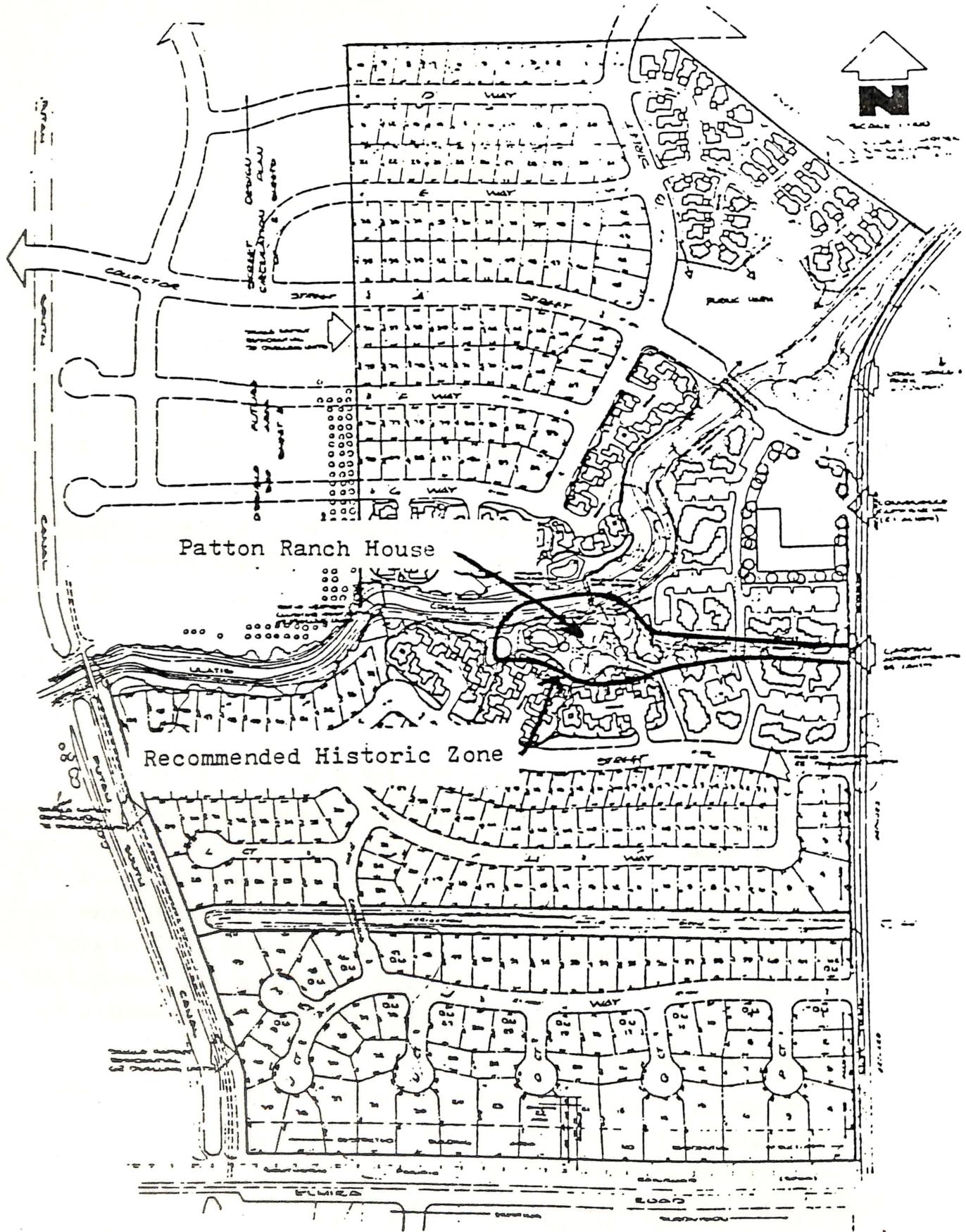
SETTING

Maps and records pertaining to the general study area environs indicate the existence and location of known archaeological resources in the general vicinity of the study area (see Appendix B). No archaeological or historical resources, however, have been recorded within the boundaries of the study area or project site, nor have either of them been subject to any previous cultural resources review.

An actual field survey of the type described as a General Surface Reconnaissance^{1/} was conducted on the project site. Because archaeological resources in the Vacaville region would most likely occur in natural drainage areas, particular attention was given to the areas adjacent to Ulatis Creek, Putah South Canal and a drainage ditch running perpendicular to the canal. Dense grass, thistle and weed growth in portions of the site made a thorough survey of those areas difficult. Under this constraint, no archaeological sites were detected within the project boundaries.

Located on the project site, however, is an old ranch house complex historically known as the Patton Ranch (Figure 11). Built around 1886, the ranch site includes a large domestic structure, two barns, and numerous smaller sheds and buildings. Walnut, eucalyptus and valley oak trees combine to form a massive canopy over the complex. Regarded as a "working" ranch throughout the years, it was apparently well known and respected for its beauty until 3 years ago, when one of the original family members died, leaving the ranch vacant.^{2/}

Therefore, it has been determined that the house, with its surrounding structures and grounds, would likely meet the criteria for inclusion on the National Register of Historic Places. Further efforts should be initiated to determine if such nomination is appropriate.



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PATTON RANCH ENVIRONS

FIGURE

11

IMPACTS

- No impact on any known archaeological sites.
- According to the Cal Com site Development Plan, high-density residential units are planned in the area of the existing ranch complex. It is unclear whether or not the ranch structures would be destroyed in conjunction with residential development. Even if these were retained, the new development would adversely impact the visual qualities of the historical site.

MITIGATIONS

- Prior to the finalization of the development plan, the project site should be cleared and examined by an archaeologist. Likewise, as portions of the study area are considered for development, archaeological field surveys should be conducted of the affected acreage. An historic assessment should also be made of any existing old structures.
- The ranch complex, including the house, barns and outlying structures, should be preserved by the developer.
- A title search and historical documentation of the ranch should be conducted to examine its potential eligibility to the National Register. Local and regional historians and historical societies should be contacted regarding interests and involvement.
- The owner should be informed of the tax incentives provided in the Tax Reform Act of 1976 (Section 2124, P.L. 94-455) for the preservation and rehabilitation of historic commercial and income-producing structures. Of course, any tax incentives would be contingent on the eligibility and acceptance of the property on the National Register or within an historic district already listed on the Register.

- The majority of the trees and vegetation located on and around the ranch should be retained to serve as a visual buffer between the historic resources and the new development.
- Reorient commercial development to the ranch site as a means of preserving the structures.

References Cited:

- 1/ King, T.F., J. M. Moratto and N.N. Leonard III. 1973. Recommended Procedures for Archaeological Impact Evaluation. Published jointly by the Society of California Archaeology and the University of California. Los Angeles.
- 2/ Baker, Leo R. Historic Site Inventory. November 15, 1978.

VISUAL

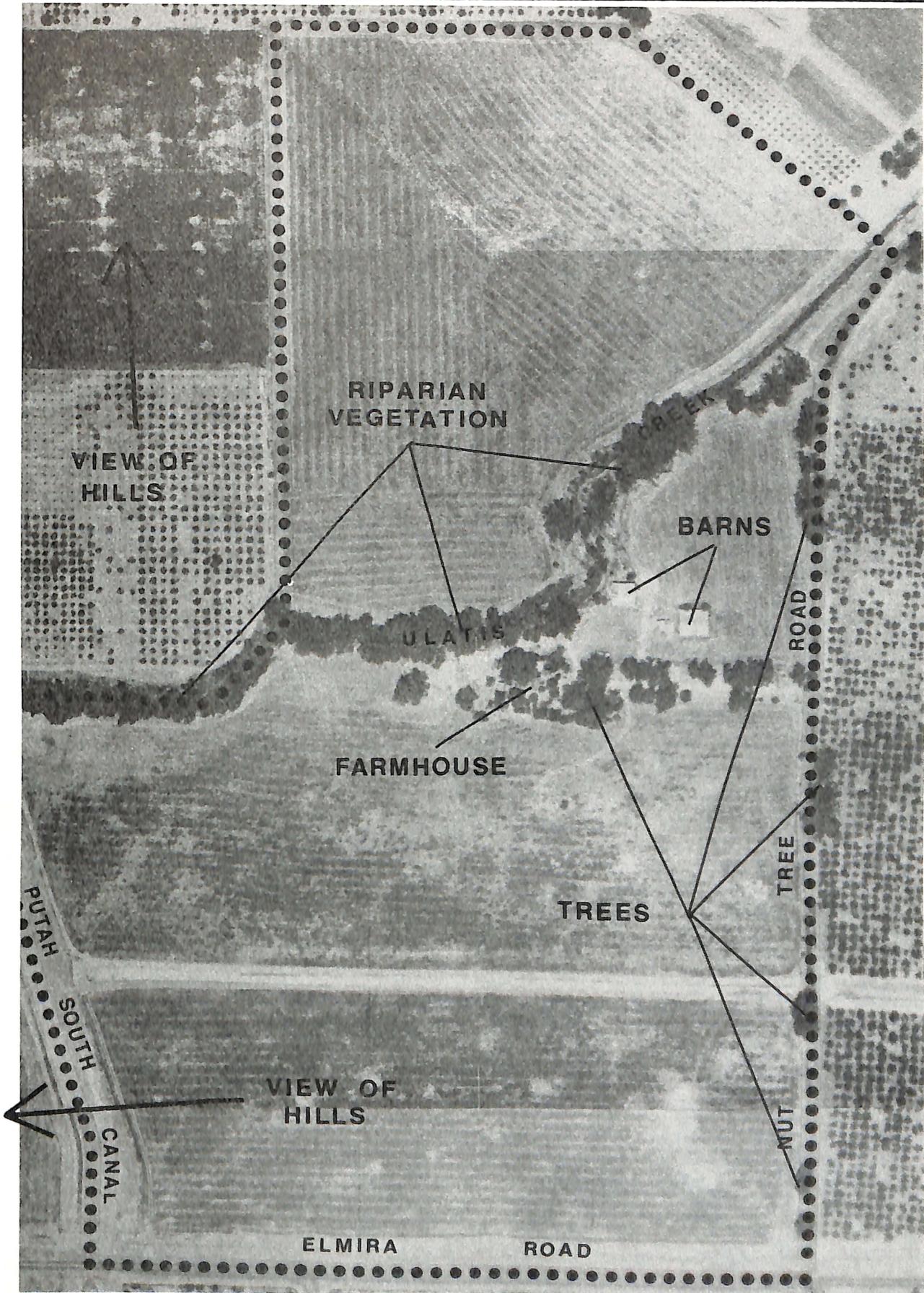
SETTING

The project site is a flat piece of land lying between Putah South Canal, Elmira Road and Nut Tree Road. Property adjacent to the northern and western boundary of the project is presently in agricultural use. Ulatis Creek, which traverses the center of the site in an easterly to westerly direction, is densely covered with Valley Oak, Willow, Cottonwood, Eucalyptus, Walnut and Maple. Nut Tree Road and an access road leading to the Patton Ranch, the only residence on the site, is lined with Black and English Walnut, Oak, Red Gum and Pine. The remainder of the site is fallow and vacant agricultural land characteristic of a rural area.

The Patton farm house, which appears to date from the late 1880's, is a 1-1/2 story structure with redwood shingles and a cross gabled roof. Due to its significance to the county's cultural history, the house has been recommended for possible inclusion on the National Register of Historic Places (see History and Archaeology section).

While the site does not have great variation in terrain, Ulatis Creek, with its overgrown riparian vegetation and mature trees, provides a visual focal point in what is otherwise rather seemingly barren grassland. The distant hills viewed to the north, south, and west from the project site provide an aesthetic backdrop, creating a physical and visual distraction from the urbanization activities of Vacaville. These natural features are considered assets to the aesthetic value of the area. (See Figure 12).

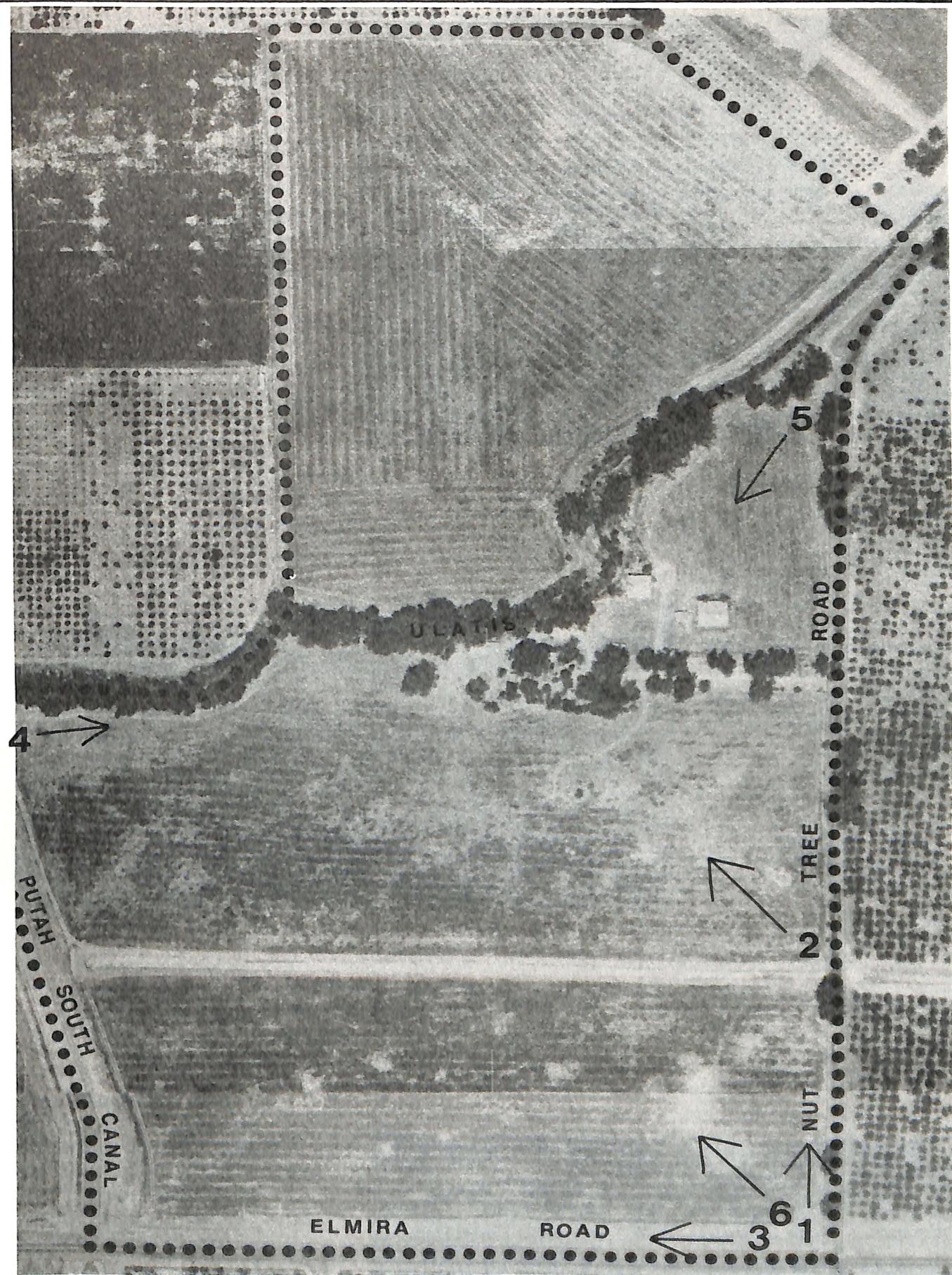
Figure 13 shows the location from which the following photographs, illustrating the visual constraints and opportunities of the site, were taken.



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VISUAL CHARACTERISTICS
OF THE PROJECT SITE

FIGURE
12



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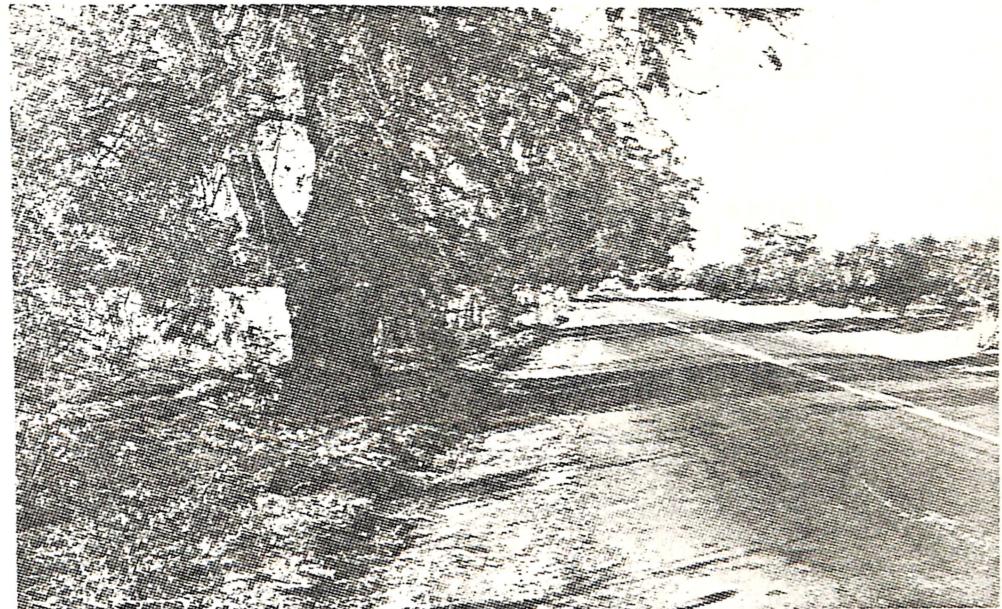
PHOTO REFERENCE MAP

FIGURE
13

VISUAL CONSTRAINTS

(1)

Widening of roadways can cause the loss of existing trees lining Nut Tree Road and the access road.



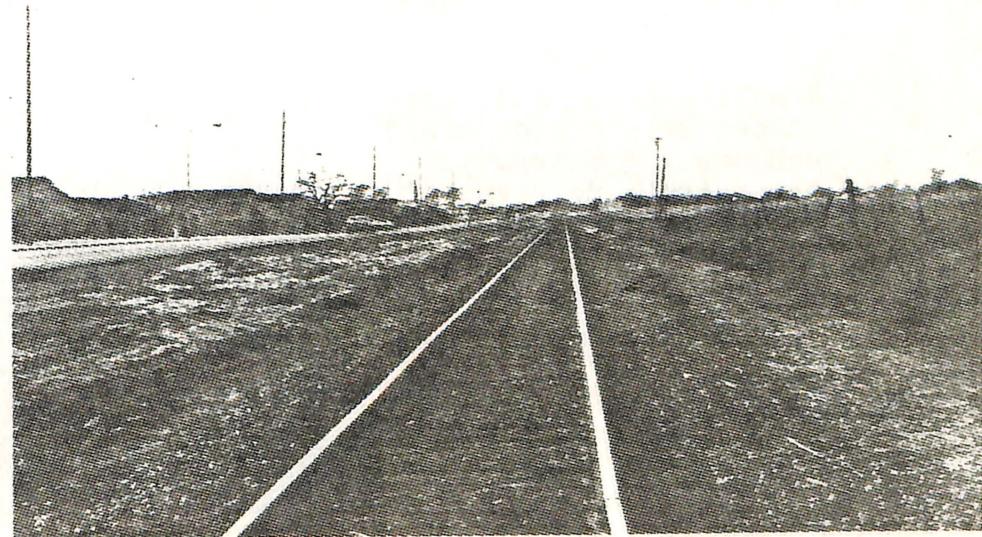
(2)

The present environment of the Patton Ranch may be altered due to the development.



(3)

Development along the railroad tracks and roadways would create the need for artificial barriers, including: landscaping, barns, and fences.



VISUAL OPPORTUNITIES

(4)

Ulatis Creek could serve as a visual focal point for the development plan, and its improvement would provide an opportunity to clear out the creek channel.



(5)

Farmhouse environs provide a visual link to the area's history and should be preserved.

(6)

A well-planned and landscaped development could enhance the otherwise homogeneous terrain. Buildings could be designed to take advantage of the views of the surrounding hills.



IMPACTS

- Development of the project site offers an opportunity to improve the visual character of the study area.
- The lots at the southern end of the project site will be directly impacted visually by the Southern Pacific Railroad and Elmira Road.
- Proposed fences along Elmira Road and a portion of Nut Tree Road will create a wall-like visual impact.
- The multi-family units on Ulatis Creek could potentially cause removal of trees and vegetation.
- The possible widening of roads would result in the loss of walnut trees lining roadways.
- Potential removal of a portion of the existing riparian area.
- Possible removal of farmhouse and barns would destroy the sites visual link with Solano County's agricultural past.

MITIGATIONS

- Trees and shrubs should be placed in front of the fences along Elmira Road and Nut Tree Road to break up the fence line.
- Although Ulatis Creek is visually secluded from the roadways, care should be taken in preserving the creek for visual aesthetics as well as for the riparian environment.
- Attempt should be made to preserve walnut and other trees.
- Variation in heights of buildings and density and height of vegetation can provide visual variety to the nearly featureless landscape.
- Farmhouse and barns could be maintained as a recreation center or other kind of community use.

TRAFFIC

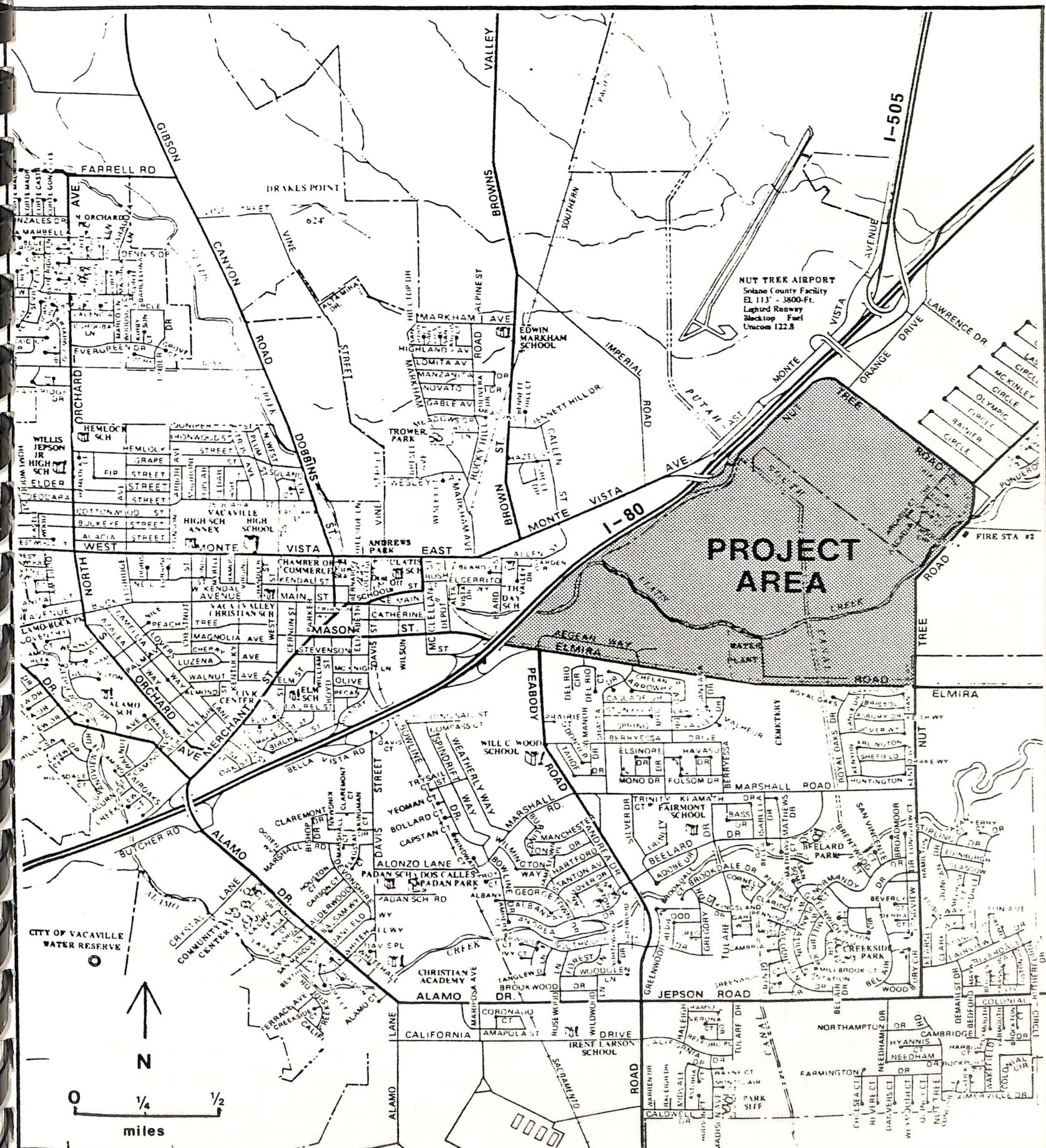
SETTING

The City of Vacaville is served by Interstate Highway 80 and Interstate Highway 505. Interstate 80 is a major highway route which extends from the San Francisco-Oakland area through Vacaville, Sacramento, Reno, and points east. The roadway is a freeway, and future improvements would include those necessary to accommodate increasing traffic volumes and interchange structure modifications necessary to integrate with the Vacaville roadway system. Interstate 505 extends from I-80 northerly to Interstate Route 5 near Dunningan in Yolo County. The roadway is presently a two lane expressway. Portions of I-80 and I-505 lie within the Vacaville city limits, intersecting at the Nut Tree interchange (Figure 14).

The study area is served by Interstate 80 which borders it on the northwest. Interstate 80 has ramps near Elmira Road, Nut Tree Road and north of the study area at East Monte Vista Avenue. These ramps are designed to serve a rural and nonurbanized area. The bridges and separations for crossing the freeway are offset from the ramps and are only designed to serve the downtown area. Therefore, travel over the ramps is circuitous, causing congestion near the street terminals.

The study area and project site are bordered on the northeast and east by Nut Tree Road and on the south by Elmira Road. Nut Tree Road is a rural, narrow, two-lane roadway with a painted center strip. Elmira Road has an overall right-of-way of 84 feet; however, the roadway is 3 to 4 lanes wide west of the study area, and only 2 lanes wide to the east. It will eventually be widened to 4 lanes, however, from Nut Tree to Peabody.

Interstate 80 carries approximately 59,000 vehicles per day. The eastern leg of Nut Tree Road carries approximately 3000^{1/2} vehicles per day with a peak hour of 300. To the north, near I-80, the roadway carries



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VACAVILLE ROADWAYS

FIGURE

14

approximately 5000^{2/} vehicles per day and 500 during the peak hour. Elmira Road, west of Nut Tree, carries approximately 8500^{3/} vehicles per day and 800 during the peak hour; east of the Peabody Road intersection, Elmira carries 13,000^{4/} vehicles per day and 1300 during the peak hour.

The signalized intersection of Peabody and Elmira Roads is the focal point for areawide traffic. At present the capacity index at this intersection is 66 and has a level of service designation B (see Appendix C). One plus mile east of this intersection is the Elmira/Nut Tree Road intersection. The capacity index at this location is 47 and has a B level of service (see Appendix C).

The roadway network shown on the Cal Com Development Plan proposes the improvement of nine street access points at the site's boundaries. Three of these would be at Nut Tree Road, and the remainder would tie into future streets to the west and north. One of these would be a proposed east-west collector extending between Nut Tree Road and an unidentified destination west of Putah South Canal. This collector would also cross Ulatis Creek.

IMPACTS

Study Area

- Based upon the land use and population assumptions for the study area contained in the project description, the year 2000 traffic along Elmira Road could increase by 3 to 4 times its present volume. Two sources^{5/} indicate that traffic within or related to the study area will increase dramatically by the year 2000 if the assumed growth is realized.
- The long range projected increase in traffic along Elmira Road will severely congest the Elmira/Peabody Road intersection. Similar congestion will occur at the intersections of Depot Street and

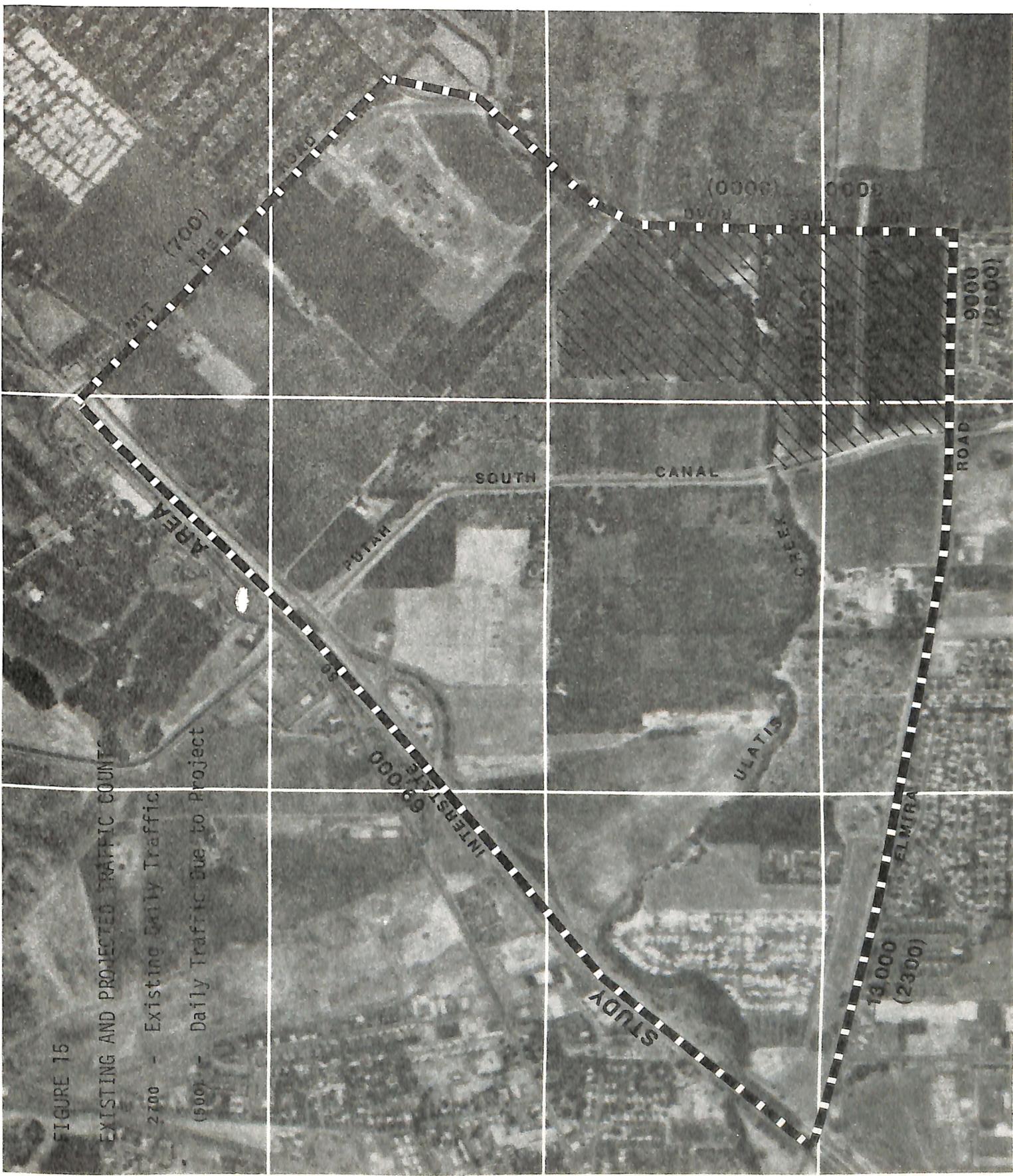
Mason Street/Elmira Road. Depot Street carries the majority of traffic between the study area and the Vacca Valley. It is unlikely that this dogleg route will be able to accommodate future travel between these two developing areas.

- Without alternate routes, Elmira Road as it passes under I-80, may carry as much as 40,000 vehicles per day by the year 2000.

Project Site

- The project will generate approximately 3600 residential trips and 2000 shopping center trips daily. Approximately 500 trips can be expected during the peak hour.^{6/} Approximately 25 percent of the trips will be oriented north, 60 percent west or south, and 15 percent east.^{7/}
- Assuming the street system proposed by the developer, 80 percent of the trips can be expected to impact the Nut Tree/Elmira Road intersection and approximately 65 percent may impact the Elmira/Peabody Road intersection. About 20 percent would use the Nut Tree Road/Orange Drive intersection.
- The project traffic can be expected to increase the volume on Nut Tree Road north of Elmira by 100 percent and Elmira Road west of Nut Tree by approximately 30 percent (Figure 15). The project traffic could add approximately 10 percent (7 points) to the capacity index of the intersection of Elmira and Peabody and could be expected to add 50 percent (28 points) to the index of Elmira and Nut Tree.

In the first case the addition would change the level of service designation from B to C and in the case of Nut Tree and Elmira, from B to D. Approximately 40 percent of the project related peak hour traffic can be expected to impact the northbound or southbound I-80 freeway ramps at Elmira Road.



- Traffic safety would be compromised at the rurally designed intersection of Elmira Road and Nut Tree Road as a result of the increase in traffic generated by the proposed development. At level of service D, a consequence of the project, excessive delays may be encountered by drivers during peak periods.
- The "Development Plan" does not indicate proposed street pavement widths. (The scale is too small to analyze internal intersections and to locate traffic generators within the multi-family area). The street plan will probably need major revision to fit into a workable, regional circulation system.
- The development plan does not indicate the proposed number of parking spaces per unit.

MITIGATIONS

Study Area

- An alternate route via an upgraded Imperial Road between Browns Valley Road and the East Monte Vista Avenue/I-80 overpass could be developed. From I-80 south it could be a two-lane road with a four-lane right-of-way. The proposed road would extend from the East Monte Vista overpass, along the city limits line, to Nut Tree Road, or adjacent to the west bank of Putah South Canal to Elmira Road. The latter would require a new railroad crossing. The subsequent intersection with Elmira Road would eventually require signalization, as would the intersection of Imperial Road at Browns Valley Road (Figure 16).
- The intersection at either end of the East Monte Vista overpass near I-80 would require extensive reconstruction and expansion, but the overpass itself could remain as two lanes for some time if the intersections are widened.

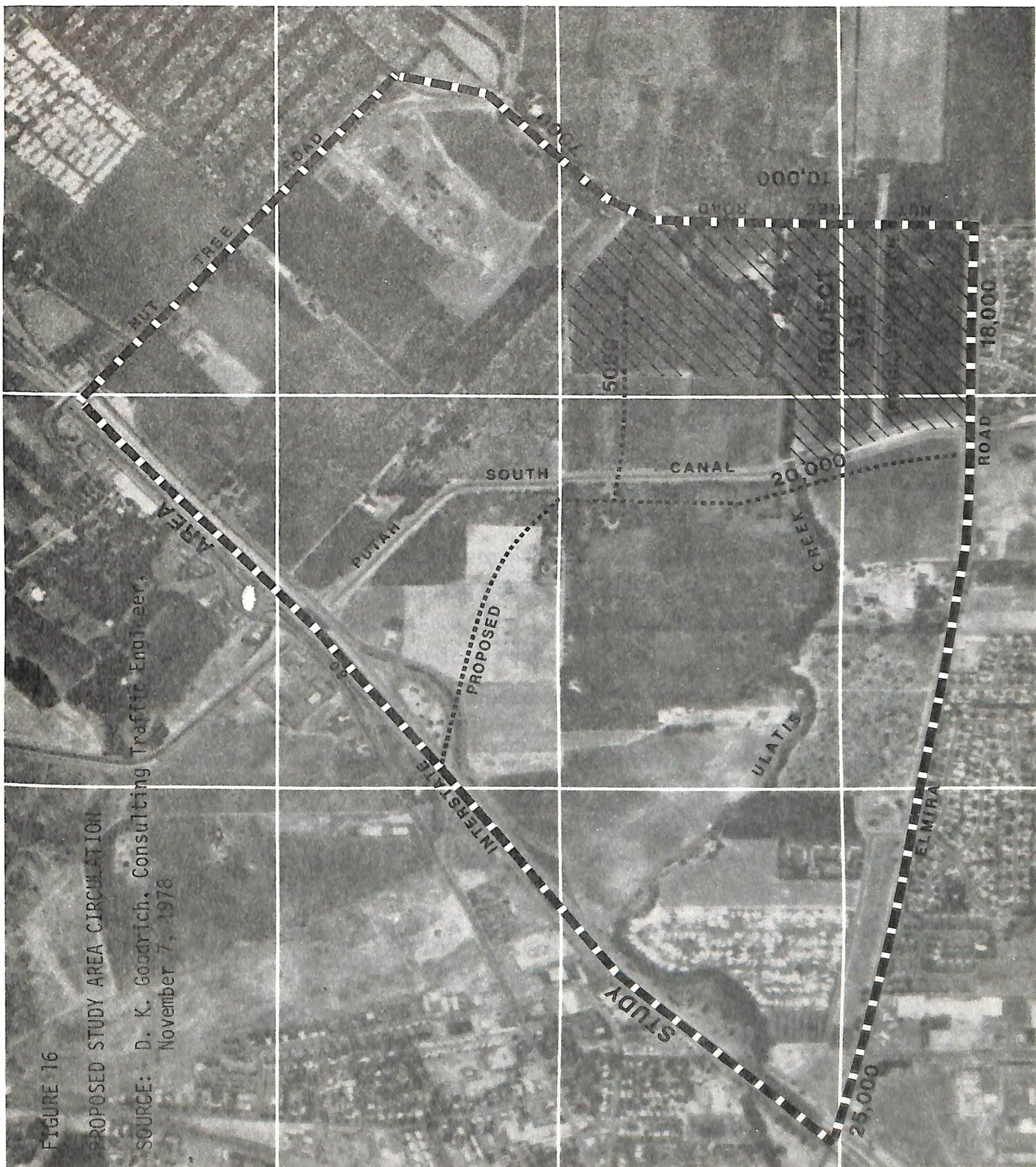


FIGURE 16

PROPOSED STUDY AREA CIRCULATION

SOURCE: D. K. Goodyrich, Consulting Traffic Engineer,
November 7, 1976

Four lanes will eventually be required on Nut Tree Road, from Elmira Road as far north as the proposed intersection with the proposed collector street ("A"). These four lanes could be divided by a median, or not, depending on the city's desire to retain existing trees. Nut Tree Road should be relocated at Orange Drive in order to tie the road into the bridge over I-80. The road should then continue northerly from the bridge, past the airport.

Project Site

- Eventually the intersection of Elmira and Nut Tree Roads should be widened to accommodate left and right turn lanes and two through lanes for all four approaches. Traffic signals would be warranted at Elmira/Nut Tree upon completion of the project.
- Nut Tree Road should be widened to accommodate left-turn pockets at all Cal Com development access points. Elmira and Nut Tree Roads should be widened at the time of the project construction to provide half of a future four-lane road.
- The collector street, designated as "A" on the site plan, should be located to be consistent with the "regional circulation" system shown in Figure 16. Thus, it should support a tie between the Monte Vista Avenue/Sharpe Road I-80 ramp intersection and Nut Tree Road. Since this collector would carry a considerable volume of traffic, it would result in an undesirable living environment for homes which front on it.
- Any revised layout should also provide internal routes for pedestrians and bicycles, away from major streets, to the extent feasible.

References Cited:

- 1/ Donald K. Goodrich, Consulting Traffic Engineer, Survey and Estimates.
November, 1978.
- 2/ Ibid
- 3/ City of Vacaville, Traffic Counts. 1978.
- 4/ Ibid
- 5/ January 1978 Solano County Transportation Study: Draft. Short Range Plan and Water System Master Plan, City of Vacaville, July, 1977, City of Vacaville DPW.
- 6/ Trip rates based on "Trip Ends Generation Research Counts," a standard reference originated for Caltrans by D. K. Goodrich.
- 7/ From EIR Water Systems Master Plan, City of Vacaville. July, 1977.

NOISE

SETTING

The City of Vacaville has adopted noise and land use compatibility criteria. Table 4 shows that in a noise environment of up to 60 CNEL,^{1/} a residential development is an acceptable land use with no special noise insulation requirements. Between 60 and 65 CNEL, the criteria state that new construction or development should be allowed only after detailed noise analysis of construction requirements is made and needed noise abatement features are included in the design. Between 65 and 75 CNEL, the criteria state that new construction or development should generally be avoided. If development does proceed, a detailed analysis of noise reduction measures must be made and needed noise-abatement features included in the design.

Although not explicitly stated, the criteria for residential development is based on providing an indoor noise level of 45 CNEL or less. The upper limit for interior noise due to exterior sources is generally 45 CNEL, since anything above this level begins to significantly interfere with sleep. Since standard residential construction, assuming open windows, provides about 15 dBA of noise reduction, this construction is adequate in an exterior noise environment of up to 60 CNEL. Above 60 CNEL windows must be closed and the home mechanically ventilated. The type of windows and the exterior wall construction will depend on the amount of noise reduction required.

According to a U.S. Environmental Protection Agency report entitled "Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety," the noise level for exterior environments where people are expected to spend time outdoors, should not exceed a CNEL of 55.

TABLE 4

Land Use Compatibility Chart for Exterior Community Noise*

Exterior Noise Level Ranges (CNEL)
and Related Land Use Policies.
(see legend, opposite page)

Land Use Category	Measured, Estimated, or Projected dBA								
	50	55	60	65	70	75	80	85	90
Residential. All dwellings incl. single-family, multi-family, group quarters, mobile homes, etc.									
Transient lodging. Hotels, motels									
School classrooms, libraries, churches									
Hospitals, convalescent homes, etc.									
Auditoriums, concert halls, amphitheaters, music shells									
Playgrounds, neighborhood parks									
Golf courses, riding stables, water-based recreation									
Office buildings. Personal business and professional services									
Commercial. Retail, movie theaters, restaurants									
Commercial. Wholesale, industrial, manufacturing, utilities, etc.									
Noise-sensitive manufacturing and communications									

* Exempted from Health & Safety, General Plan Revision Program, Solano County and Cities of Fairfield, Vacaville and Suisun, July, 1976.

TABLE 4 (continued)

Land Use Policies Legend

Acceptable land use. No special noise insulation requirements.

New construction or development allowed only after detailed noise analysis of construction requirements is made and needed noise-control features are included in design.

New construction or development should generally be avoided. If development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise-control features included in design.

New construction or development generally not allowed.

SOURCE: Criteria developed with consideration of Federal Environmental Protection Agency findings on noise levels required for uninterrupted sleep or speech, from studies on hearing loss in the population at large due to noise, from Highway Research Board findings (Highway Board, Highway Noise: A Design Guide for Highway Engineers, National Cooperative Highway Research Program Report 117, 1971), and from knowledge of planning current noise levels.

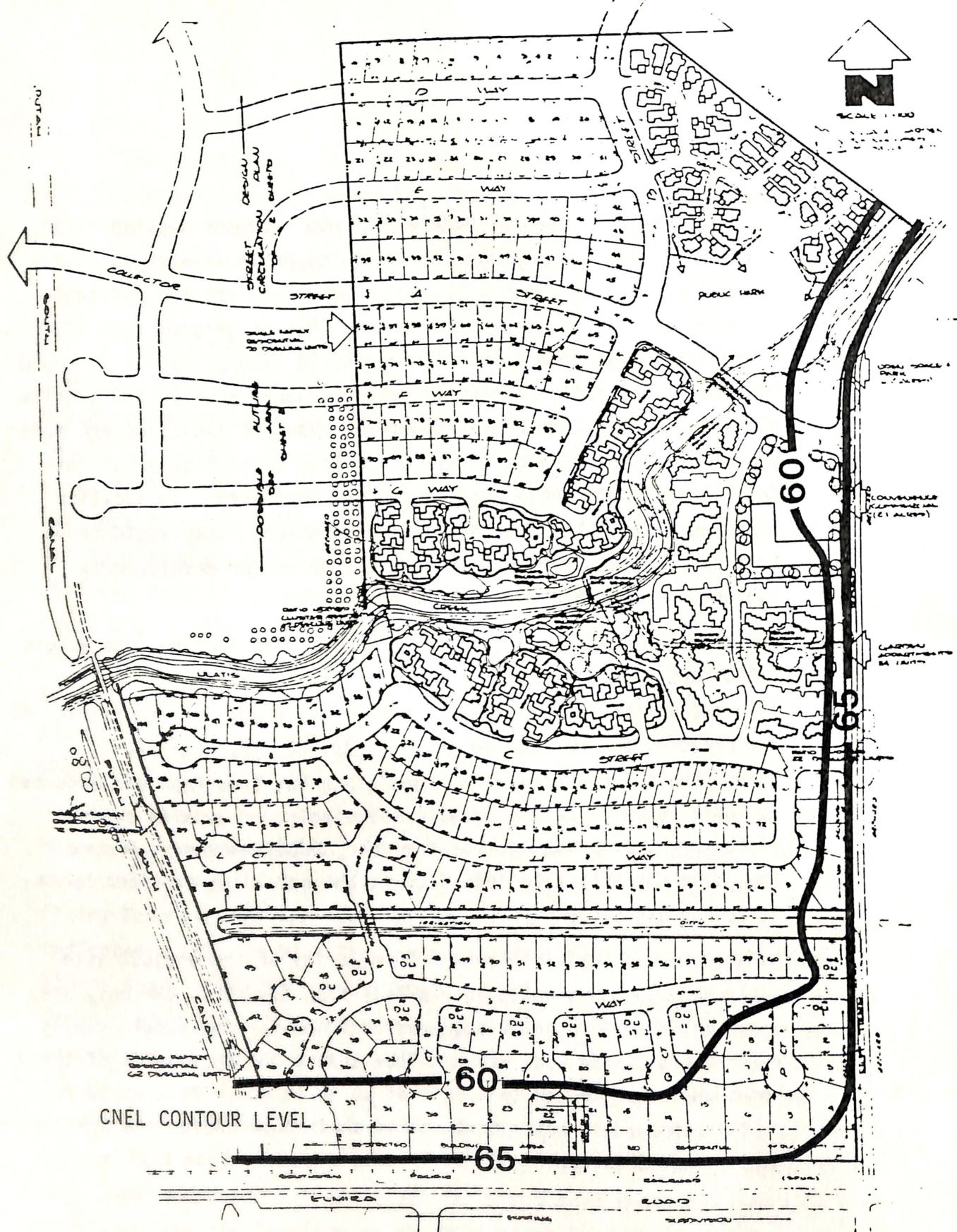
The study area, including the project site, is exposed to traffic noise from Interstate Highway 80, Elmira Road and to a lesser extent, from Nut Tree Road. Other sources of noise are occasional train traffic on the Southern Pacific spur line (two to three trains a day) ^{2/} and aircraft overflights from Travis Air Force Base and Nut Tree Airport.

The health and safety element of the General Plan Revision program prepared for the County of Solano and the cities of Vacaville and Suisun contains CNEL noise exposure contours for both present and future levels of traffic, railroad, and aviation activities. The noise element shows that 1975 noise levels along Elmira Road are a CNEL of 60 at 132 feet from the centerline of Elmira Road. No contour is shown for Nut Tree Road as the present levels of traffic do not yield a 60 CNEL at 1,650 feet and a CNEL of 65 at 715 feet from the centerline of Interstate 80. Furthermore, the element reveals that the noise due to aircraft overflights from Nut Tree Airport and Travis AFB does not create a 60 CNEL contour on the project. The combinations of noise from all these sources contribute to a relatively high ambient noise level in the general study area.

A 24-hour noise measurement made from Thursday, December 29, 1977, to Friday, December 30, 1977, at the intersection of Elmira Road and Leisure Town Road approximately 210 feet north of the centerline of Elmira Road and 120 feet west of the centerline of Leisure Town Road indicated a CNEL of 58.^{3/} The dominant noise sources were traffic on Elmira Road, aircraft overflights, and occasional trains on the Southern Pacific spur line. Comparatively, present noise levels at the project site would be approximately 1 dBA higher than the 1977 noise measurement. The average daily traffic level on Elmira Road at the same intersection is presently 6,000 to 7,000 vehicles per day and the traffic volumes on Elmira Road west of Nut Tree Road are presently about 8,500 vehicles per day. When adjusted for the distance from Elmira Road, the noise measurement supports the location of the present noise contour shown in the noise element.

IMPACTS

- Assuming that residential development would be the dominant land use type in the study area, the following noise levels can be determined. In the year 2000, the area within about 2,000 feet of Interstate 80 would be exposed to a CNEL of greater than 60. Residential development in this area could take place but it would have to be carefully planned to meet the goals of the City's noise element. As the commercial/industrial types of land uses are more compatible with the high levels of traffic noise that exist next to Interstate 80, these uses should be considered. In addition to being compatible with the noise environment, they would serve as partial noise barriers reducing the noise for developments further from the highway.
- Based on the analysis presented in the Traffic Section, the future (2000) noise exposure of the project site is calculated, taking into account areawide impacts. Noise levels adjacent to Highway 80 are expected to increase by about 2 dBA over present levels. Noise levels along Elmira Road and along Nut Tree Road are expected to increase by 3 dBA and 6dBA, respectively. The noise exposure of the site, as proposed, for the year 2000 is shown on Figure 17. The noise contours take into account the shielding provided by intervening structures.
- As illustrated in this Figure, the majority of the project site would be exposed to noise levels less than 60 CNEL. The only area where this level would be exceeded would be for the single-family homes along Elmira Road and Nut Tree Road. The back yards of these homes would be exposed to a CNEL of up to 65 dBA. This would result in an outdoor noise environment that would exceed the U.S. EPA's goals of 55 CNEL by 10 dBA.



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NOISE CONTOURS - YEAR 2,000

FIGURE
17

- The amount of traffic generated by the project itself will increase noise levels along Elmira Road and Nut Tree Road by less than 3 dBA. Because this increase is negligible, no impact due to project-generated traffic is expected.
- A fire station has been proposed that would be located at the north-west corner of the intersection of Elmira Road and Nut Tree Road. Although the fire station would not generate an average annual CNEL of greater than 60 at the nearest residences, occasional maximum noise events of up to 75 dBA inside of the nearest homes will occur when the fire engines leave the station with their sirens on. At night, this level will almost certainly awaken people who live adjacent to the fire station and will briefly cause them annoyance during the day. It is impossible to know how often fire engines will be leaving the station.
- Project construction will also have an impact on noise levels. Impacts would be restricted to normal working hours on weekdays when construction would take place. The noise levels associated with the construction of this development would occur generally in three areas: site preparation and road construction; framing; and finishing.

During road construction and site preparation, heavy equipment would be used. Grading equipment, paving machines and trucks would be the most significant noise sources during this phase. These pieces of equipment typically emit from 83 to 90 dBA at a distance of 50 feet. Construction within 300 feet of existing homes can be expected to cause temporary annoyance for these residents. Due to the relatively short duration of this phase, however, the impact would not be expected to be significant. Trucks entering and leaving the project would generate levels of about 86 dBA at the residences along the affected streets. Since these trucks would be present only during working hours, the noise impact, although annoying, would not be significant.

During framing, trucks would continue to be the most significant noise source. The noise created by power saws and hammering would also be significant. Again, since the majority of construction would be remote from the existing residences, noise impact is not expected to be significant during this phase.

The finishing phase is primarily an indoor activity, and noise during this phase would not be noticeable.

MITIGATION

- To reduce the noise levels, in the first rows of homes along Elmira Road, the use of a noise barrier is suggested. A noise barrier 6 feet high along the rear property line of the homes along Elmira Road and Nut Tree Road, would reduce the noise level in the backyards of these homes to less than 60 CNEL. To be effective the noise barrier should have a minimum surface weight of four pounds per square foot (equivalent to 1-1/4 inch plywood) and should have no holes or gaps in it. The city has adopted development standards for residential projects adjacent to arterial streets and railroad right-of-ways. This requires a minimum 40-foot setback, and a 6-foot high non-wood fence. Metal and masonry fences are both effective in reducing noise; however, caution should be taken in designing a metal barrier. A 6-foot high metal fence should be a minimum 18-gauge and the taller the fence the more massive the required gauge.

References Cited:

1/ The reader is referred to Appendix D "Fundamentals of Environmental Acoustics" for a discussion of acoustic terminology and concepts.

2/ Based on telephone communication with staff at Southern Pacific's Western Division Office. Oct. 1978.

3/ Noise readings taken by Charles Salter Assoc. Inc. for Reimer Associates, December 1977.

SOCIOECONOMIC

FISCAL

This section analyzes the proposed project's anticipated benefits to the community in tax revenues and the costs associated with providing public services and facilities. Of particular concern is the impact of Proposition 13 on revenues generated by the project in the form of property taxes.

Property Tax Structure

SETTING

Because the project site is located outside the present incorporated city boundaries, the city does not receive a share of revenues derived from taxes on the property. Consequently, impacts of development upon property-generated revenues cannot be determined. Therefore, an alternate site has been selected within the city limits to provide a base for comparing present with future property tax revenues. The alternate site is comparable in size to the project site and located on southwest side of Nut Tree Road adjacent to the Woodstock Green Subdivision.

Present tax information on the alternate site property includes the following:

<u>Assessor's Parcel</u>	<u>Tax Rate Area</u>	<u>Assessed Valuation</u>	
		<u>1977-78</u>	<u>1978-79</u>
131-01-02	6019	12,500	13,005
131-01-04	6019	13,500	12,295
131-01-05	6019	17,750	18,466
131-01-07	6019	31,200	32,460
131-01-12	6019	29,500	30,691
131-01-13	6019	<u>28,250</u>	<u>29,391</u>
	Total	132,700	136,308

Property taxes totalled \$14,502 and \$4,005 for 1977-78 and 1978-79, respectively. The 1978-79 amount reflects the implementation of Proposition 13 which mandates that property assessments be rolled back to their 1974-75 valuation levels and that annual valuations are not to exceed 2 percent of that base. The initiative also limits the rate at which local jurisdictions can tax the full market value of property to 1 percent, or \$4.00 per 100 of assessed valuation. The 1 percent tax rate only applies to ad valorem taxes, however, and not to fixed liens or voter approved bonds.

IMPACTS

Considering future revenues generated by the project and the effect of Proposition 13 on these revenues, a comparison of taxes for the alternate property in its present state with those resulting from development as proposed for the project site is provided in Table 5.^{1/} The 1978-79 Taxes column indicates a 72 percent reduction in revenues over the previous year due to the tax rate structure mandated by Proposition 13.^{2/} Even though the tax rate will vary from year to year, it is assumed that future revenues generated by development to the property will be reduced by corresponding ratios.

TABLE 5
COMPARISON OF PROPERTY TAX REVENUES

	<u>1977-78</u>	<u>1978-79</u>	<u>Future</u>
Assessed Value	132,700	136,308	\$5,337,000 - 6,782,000
Property Taxes Generated	14,502	4,005	583,270 - 741,191 ^{a/} 156,843 - 199,309 ^{b/}

a/ Based on 1977-78 tax rate

b/ Based on 1978-79 tax rate

The City of Vacaville has experienced a corresponding reduction in property tax revenues for 1978-79, as Table 6 illustrates. Property taxes contributed 5.6 percent of the total revenues in 1978-79, compared to 12 percent in the previous year.

TABLE 6
PERCENTAGE OF PROPERTY TAXES TO TOTAL CITY REVENUES

	Actual				Estimated
	1974-75	1975-76	1976-77	1977-78	1978-79
Property Taxes	956,378	1,234,653	1,379,395	1,682,813	917,657
Total Revenues	4,769,646	7,626,375	11,692,599	14,468,759	16,453,386
Percent	20%	16%	18%	12%	5.6%

A comparison of estimated total revenues to total expenditures for 1978-79 shows a deficit of \$404,846.^{3/} To streamline the budget, 7 personnel positions including 2 policemen and 1 fireman which were slated to be added to current department staffs were cut.^{4/}

According to Mr. Killen, Assistant City Finance Director, the City plans to use \$450,000 of its 1977-78 reserves to balance the current operating budget. Moreover, there are no additional revenue sources currently available to the City to compensate for the loss in revenues from property taxes, except to raise various development and hookup fees. The City has elected not to accept funds provided by the state to compensate for local property tax revenue losses.

Meanwhile, the City must continue to provide and maintain existing levels of services to its community residents at increased costs due to inflation. While new development will increase demand on public services and facilities, the revenues generated by that development in the form of property taxes will be contributing a smaller portion to the City's budget than in the past. This will augment the City's difficulties in maintaining a balanced budget in the future.

Distribution of future property taxes generated by the project assumes the 1978-79 tax-rate breakdown. The pie graph in Figure 18 illustrates allocation of future property taxes to the various service entities. A more detailed breakdown is available in Table 2 in Appendix E.

MITIGATIONS

None

Summary of Development Costs

SETTING

Aside from property taxes, other sources of revenue from the proposed project exist in the form of fees imposed on the developer. These include fees for EIR preparation, rezoning, capital improvement, building inspection, water connection, storm drainage and sewer hookup, recreation and school impact. In addition, the Department of Public Works charges a plan check and inspection fee at the rate of 6 percent of total construction and installation costs.

IMPACTS

Assuming full development of the project site, based on 468 dwelling units and a 3-bedroom size unit, revenues generated by these fees total \$1,421,246+. (See Table 7) These revenues would accrue incrementally since development of the project site is planned over a 6-year time span.

MITIGATIONS

None.

FIGURE 18
DISTRIBUTION OF FUTURE PROPERTY TAXES GENERATED BY PROJECT

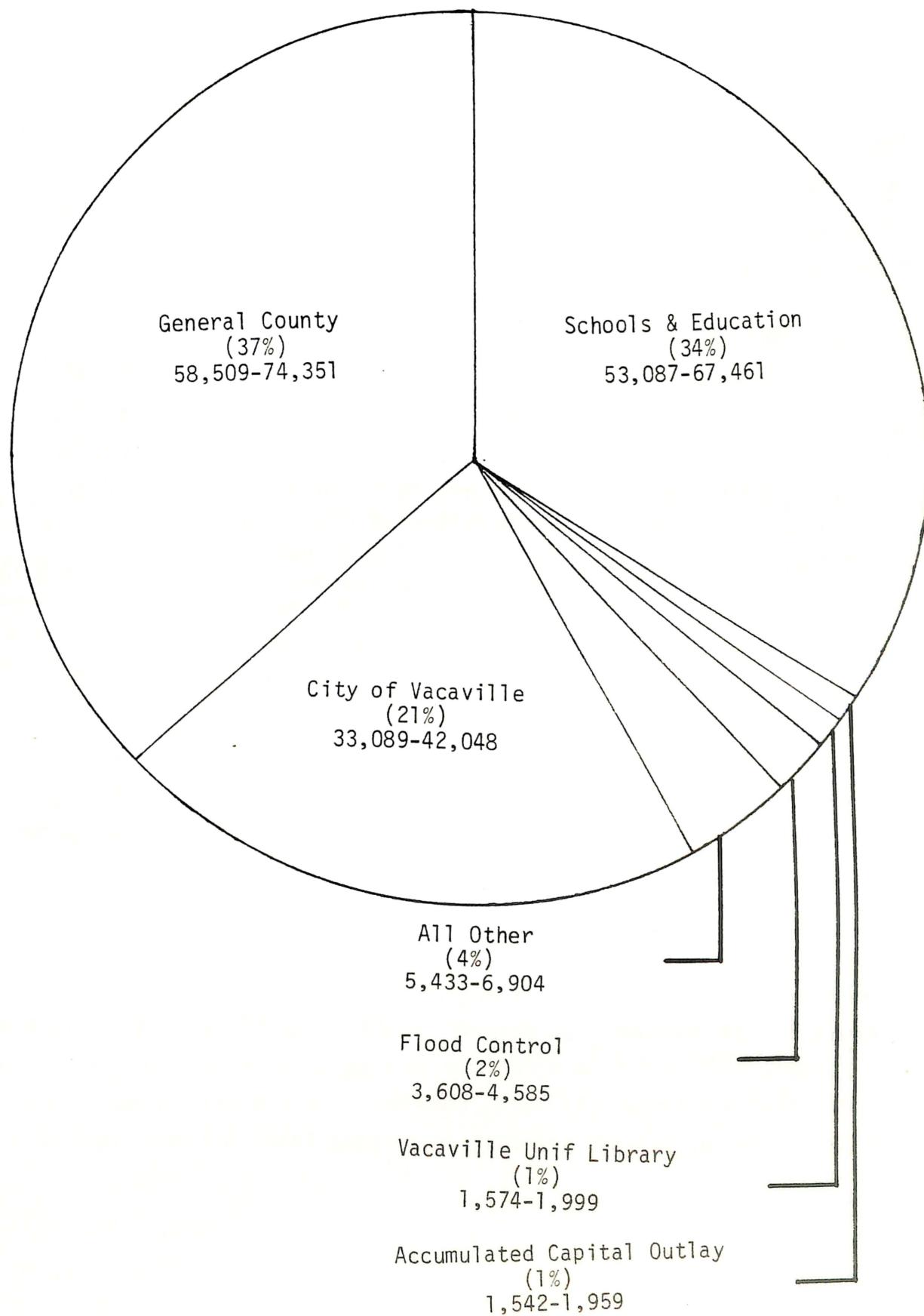


TABLE 7
SUMMARY OF DEVELOPMENT COSTS

<u>Fee</u>	<u>Unit Cost</u>	<u>Full Development</u>
EIR	\$500+ full cost	\$ 500+
REZONING	300+ \$25/acre	2,250
STORM DRAINAGE	over 10 acres \$300/acre	26,400
<u>For Multi-Family Units:</u>		
CAPITAL IMPROVEMENT	\$371/unit	90,524
WATER CONNECTION	\$350/unit	85,400
SEWER HOOKUP	\$424/unit	103,456
BUILDING INSPECTION	\$250/unit (1 bedroom) \$300/unit (2-3 bedrooms)	73,200 (max.)
RECREATION	\$530/unit (1 bedroom) \$609/unit (2 bedrooms) \$689/unit (3 bedrooms)	168,116 (max.)
SCHOOL IMPACT	\$150/unit (1 bedroom) \$300/unit (2 bedrooms) \$450/unit (3 bedrooms)	109,800 (max.)
<u>For Single Family Units:</u>		
INCLUDES ALL FEES ABOVE	\$3,400/unit	<u>761,600</u>
	TOTAL	1,421,246+

Source: Mr. Al Damiano, Building Official, City of Vacaville, telephone communication, 11-9-78.

PUBLIC UTILITIES

Water

SETTING

The City of Vacaville has both a ground and surface supply of water. It is estimated that the underlying water table has a safe yield of 9,000 acre-feet per year.^{5/} In addition, the city has a contract with the Solano Irrigation District which allows diversion of up to 5,600 acre-feet of water per year from the Putah South Canal. However, the canal water has a high turbidity level and has to be treated before it can be consumed. The turbidity problem limits use of canal water to summer months, when water demand is higher and turbidity level is lower.

The City supplies water to residents, businesses, and industrial users within its jurisdiction. Ground water is obtained from 5 wells located on the east side of Highway 80, in the vicinity of Elmira Road between Nut Tree Road and Leisure Town Road. The 5 wells can pump a maximum of 8.3 million gallons per day (m.g.d.).

The Water System Master Plan for the City of Vacaville calls for installation of two new wells with a pumping capacity of 4 m.g.d., which will be located in the well field east of the freeway. The southeast corner of the project site is being considered as a location for one of the wells.^{6/} The Vacaville Public Works Department usually requires a one-acre parcel of land for a well site. However, it is possible to limit the dimensions of the well lot to a size capable of accommodating the well and pump.

During the summer peak the City pumps approximately 8 m.g.d. from ground water and 5 m.g.d. from Putah South Canal. The two new wells will give the city an additional supply of available water over its present peak summer demand (13 m.g.d.). However, the City cannot increase the 5 m.g.d. draw from the canal because of capacity limitations of the water

treatment plant. This limitation permits the City to draw only 2,000 acre-feet per year of the 5,600 acre-feet for which it has a contract. In order to increase the draw from Putah South Canal, the capacity of the plant would have to be expanded. It is estimated that expansion will have to occur between 1981-82.^{7/}

From November 1, 1977, to October 31, 1978, water consumption in Vacaville totalled 2,349.9 million gallons or 7,212 acre-feet. The peak summer demand in June, 1977 equalled the existing supply capacity of the system (13 m.g.d.). However, the total amount of water consumed (7,212 acre-feet) was below the total estimated water supply (14,600 acre-feet). Average daily water consumption is computed to be 330 gallons per day per capita, or an estimated 1,000 gallons per household.^{8/} The high figure reflects the continuing agricultural irrigation demand in the service area.

The project site and study area are already served by two 12-inch water mains. One main is located under Elmira Road between Nut Tree Road and I-80. The other line is located under Nut Tree Road between Elmira Road and I-80. The proposed Cal Com Development can be served by these two mains.

IMPACTS

- The Cal Com Development when completed will consume approximately 425,040 gallons of water per day. The City of Vacaville can meet this projected demand if the project is constructed in phases. However, if the City's growth management system were rescinded, there would be a problem in supplying water to this and other projects within Vacaville.^{9/}
- Development of the project will require the extension of existing water mains under Elmira and Nut Tree Road onto the project site. The developer will bear the entire cost of extending these lines. Since no water supply system for the site has been designed, it is not possible to estimate the cost of constructing these facilities.

Appendix E contains a breakdown of present unit costs for water lines and other facilities. In addition, the city has a water service charge of \$180 per dwelling unit. Therefore, the project will generate \$84,240 in new revenue.

MITIGATIONS

- The builders of the proposed project should be required to install water conserving toilets, shower heads, faucets and other similar appliances in each of the dwelling units.
- The use of native plants and shrubs in place of turf lawns in both the single-family and multi-family residential areas will reduce the need for extensive summertime water expenditures.

Sewer

SETTING

The City of Vacaville provides sewage disposal for all residents, businesses, and industry within the city limits. The City operates the Easterly Wastewater Treatment Plant of Elmira, which has a design capacity of 5 m.g.d. Sewage treatment consists of primary clarification biological treatment using activated sludge, secondary clarification, chlorination, and oxidation in ponds, prior to discharge into Alamo Creek. The discharge then flows into Ulatis Creek which flows into Cache Slough about 6 miles downstream.

Since there is no natural runoff in summer, the only flow in Alamo Creek is essentially the discharge from the wastewater treatment plant. During the irrigation season, much of this flow is diverted at various points downstream for unrestricted irrigation use. In winter months, the effluent combines with surface water runoff as it flows downstream into Alamo Creek.

The City of Vallejo obtains its municipal and domestic water supply from Cache Slough immediately downstream from its confluence with Ulatis Creek. Consequently, the City of Vallejo, Solano County Health Department, and the State Department of Health have formally objected to any discharge of treated wastewater into Alamo Creek because of the proximity of the domestic water supply to the discharge from Ulatis Creek.

Current waste discharge requirements under the City's National Pollutant Discharge Elimination System (NPDES), Permit No. CA0077691, contain a discharge prohibition to surface waters, and require land disposal with a planned design for unrestricted irrigation use. The City is exploring the land disposal option to comply with the state's zero discharge requirement for Alamo Creek.

Vacaville has received a state grant to expand its treatment plant capacity to 7.7 m.g.d. with land disposal of treated wastewater which may be used for irrigation of landscaping and pastures. The City is presently taking bids for plant expansion, and completion of the new facilities is expected late in 1979. The expanded plant will handle (9 months of the year) 1 m.g.d. of onion dehydrator process water, 0.4 m.g.d. from the California Medical Facility, 1.4 m.g.d. from existing industrial and institutional flow, and 5.3 m.g.d. from residential areas.^{10/} If population projections under the growth management system hold true, the expanded plant will be at capacity by 1984. At that time the plant will have to be expanded to a capacity of 10 m.g.d. to handle the year 2000 population (90,000) projection for the City. This projection assumes no new wet industries will be built in Vacaville.

There is a 27-inch sewer main located adjacent to the site under Elmira Road. The line runs eastward to the treatment plant at Elmira.

IMPACTS

- The City of Vacaville Public Works Department has indicated that their treatment facilities are not adequate to serve the proposed

Cal Com Development for the next two years.^{11/} The existing sewer transmission lines in the area are capable of handling estimated flows for the project site and the study area.

- The average wastewater flow for the City of Vacaville, is 100 gallons per day per person. Therefore, the Cal Com Development, upon completion, will generate an additional 128,800 gallons of effluent per day.
- All sewer lines that have to be extended to serve the proposed project will be installed and paid for by the developer. Since no sewer system has been designed for the project, it is not possible to estimate the cost of constructing these facilities. Appendix E contains a breakdown of present unit costs for sewer lines. In addition, the City levies a \$230 per dwelling unit sewer hookup charge. This would result in a total hookup cost of \$107,640.

MITIGATIONS

- Strict adherence to the City's adopted growth management system is the best method of insuring that new development does not exceed the capabilities of the Elmira wastewater treatment plant and disposal facilities.

Solid Waste Disposal

SETTING

Solid waste disposal service for the project site and the study area would be provided by the Vacaville Sanitary Service. Solid waste collected by Vacaville Sanitary is disposed of at their 160 acre B & J Landfill site. The service has been using the site for the last 12 years and it still has a projected life span of 75-80 more years.^{12/} Once the disposal site is filled, solid waste generated within Vacaville Sanitary's Service area will have to be disposed of at another site. However, it is possible that

the B & J site could become the regional site based on its remaining capacity of 10.4 million cubic yards.

The Solano County Solid Waste Management Plan (1976) proposes a gradual transition towards consolidating the disposal sites in the central and eastern areas of the county to one location. Once the old disposal sites are filled to their capacities, refuse would be hauled to the regional site which would eventually serve as a resource recovery site for materials and energy. Based on this plan, the regional site is to be located near Fairfield. A specific site has not been chosen to date. Implementation of the solid waste management plan should meet the refuse disposal needs of the county to the year 2000.

IMPACTS

- Vacaville Sanitary Service indicates that they have adequate manpower, vehicles, and facilities to provide service to the project site and the project area.^{13/}

MITIGATIONS

- The use of non-disposable containers, resource recovery systems, and energy development would expand the life expectancy of the county's existing and planned landfill sites.

PUBLIC SERVICES

Schools

SETTING

The study area and the project site are within the boundaries of the Vacaville Unified School District. According to the District's

spokesperson^{14/}, the study area and project site would be served by Elm, Fairmont and Elmiro Elementary Schools; Will C. Wood Junior High School; and Vacaville High School. The current enrollment (October, 1978) and capacities of the schools is shown in Table 8 .

TABLE 8
CURRENT ENROLLMENT AND SCHOOL CAPACITIES ^{15/}

<u>School</u>	<u>Current Enrollment</u>	<u>Capacity</u>
Elm Elementary	565	596
Fairmont Elementary	706	754
Elmira Elementary	306	304
Will C. Wood Junior High	1079	1149
Vacaville High School	1946	1774

At present the elementary schools which would serve the Cal Com Development and the study area are of or near capacity. However, there is classroom space available in some of the elementary schools in the older section of the community. These classrooms could be utilized by busing children from the new residential areas to these schools. The other option the district is presently utilizing is to project various school enrollments for a given year, and to install portable classrooms at those schools which are expected to exceed their capacities.^{16/}

The District is constructing a new elementary school south of the study area (Sierra Vista Elementary) in the Creekside subdivision. The new school will serve new subdivisions south of the study area. The capacity of the school is 300 students, with portables holding 450 students. Children who will attend this school are presently enrolled in Elm and Fairmont schools. The projected enrollment for Sierra Vista

is 420-440 students. As a result, Elm's enrollment is expected to decrease by 240 and Fairmont by 160.

Unlike the elementary schools, the junior high and high schools will require the construction of new facilities to handle their projected increases in enrollment. The District has been interested in a new high school site and elementary school site in the area south of Elmira Road and east of Nut Tree Road.

At present the Vacaville Unified School District does not have a staffing problem. However, the passage of Proposition 13 has cut into their revenues and threatens to curtail some of their educational programs. The present student teacher ratio is 1 to 29.

In the past, the Vacaville Unified School District has attempted to estimate the increase in student enrollment that would be generated by a new subdivision. However, their experience has shown these projections to be totally unreliable. Therefore, they are no longer making these estimates. Nonetheless, the District is projecting a 2.8 percent increase in school enrollment in the coming year.^{17/} The following table shows the increase in enrollment by grade level.

TABLE 9
PROJECTED SCHOOL ENROLLMENT BY GRADE LEVEL
FOR THE ENTIRE DISTRICT

<u>Grade</u>	<u>Current Enrollment</u>	<u>Projected Oct. 1979</u>	<u>Projected Oct. 1980</u>
K - 6	4477	4455	4524
7 - 9	2071	1995	1938
10 - 12	2028	2115	2164
Misc.	99	-	-

IMPACTS

- Since the Cal Com Development will be phased over a number of years, it is expected that new elementary students associated with the project can be served by existing facilities. This assumption, however, assumes transporting the children to schools in the area.
- New high school students associated with the project will intensify the need for a new high school.
- The Vacaville Unified School District will need a new elementary school and site within the study area but not on the project site.
- The implementation of Proposition 13 has drastically affected the amount of local tax contributions to the school district. The table below compares levels of funding from local sources to the total school budget for 1977-78 and 1978-79.^{18/} To compensate for the reduction in funds from local sources, the state is providing funds equal to 90 percent of the school program cost plus growth. In 1978-79, the school district will receive \$13.8 million in state funds.

TABLE 10
COMPARISON OF LOCAL FUNDING TO TOTAL SCHOOL BUDGET

	<u>Local Tax Contributions</u> (in millions)	<u>Total Budget</u> (in millions)
1977-78	4.9	13.7
1978-79	3.0	14.3*

* Assuming a standard budget growth rate, the budget would total \$16.3 million; the \$14.3 million figure reflects cutbacks due to Proposition 13.

To assess the impact of Proposition 13 on the school district in terms of future revenues generated by the project, tax revenues for 1977-78 and 1978-79, which reflect present site conditions, are compared with those to be generated by site development, using pre (1977-78) and post (1978-79) Proposition 13 tax rates. The figures in the table below indicate that the school district would lose approximately \$220,679 to \$280,429 (an 81 percent reduction) in future revenues generated by project development under the new tax rate structure.

TABLE 11
COMPARISON OF TAX REVENUES TO SCHOOL DISTRICT

<u>1977-78 Taxes</u>	<u>1978-79 Taxes</u>	<u>Taxes at Full Development @1977-78 Rate</u>	<u>@1978-79 Rate</u>
\$6,808	\$1,356	\$278,766-347,890	\$53,087-67,461

MITIGATIONS

- The City of Vacaville should work with the Vacaville Unified School District as outlined in the City's adopted growth management system to assure that new residential development can be served by the District and that new developments are required to dedicate sites and facilities as allowed for under the State's Subdivision Map Act.

Fire Protection

SETTING

Fire protection for the study area and the project site, following annexation, would be provided by the Vacaville Fire Department. The de-

partment has two stations: Station #1, located in the center of Vacaville at Dobbins and Kendall Streets, and Station #2, located at Cooper School Road and Nut Tree Road. Currently the department has one chief, one assistant chief, one training officer, one fire inspector, 1 dispatcher, and thirty firefighters. The department's present equipment inventory includes eight power wagons, five one-thousand gallon pumbers, a twenty-four thousand gallon tanker, a rescue truck, and an ambulance.

The nearest fire station to the project site is Station #2 located at Cooper School and Nut Tree Roads. The station is a four-man station equipped with one 1000-gallon pumper, an ambulance, and a power wagon for grass fires. The Vacaville Fire Chief would like to relocate Station #2 to the northwest corner of the Elmira-Nut Tree Road Intersection.^{19/} Preliminary negotiations between Cal Com and the City have resulted in an agreement to preserve 1-1/4 acres of land at the southeast corner of the site for a fire station.^{20/} At present, response time from Station #2 to the project site is less than a minute. Relocating the station, as far as the Cal Com Development is concerned, will not significantly lower response time.

IMPACTS

- . The proposed Cal Com Development will have a basic fire flow requirement of 1000 gallons per minute. The water main under Elmira and Nut Tree Roads is capable of delivering the required fire flow.
- The proposed project can be served by the present fire-fighting force at Station #2. However, total buildup of the entire study area and the adjacent lands will require increasing Station #2 to a five-man station. This would require hiring three additional firemen.

- Based on an average cost of \$23,554 per fire fighter (includes only salaries and benefits), the total cost of three additional men at Station #2 would be \$70,662.^{21/}

MITIGATIONS

- Fire safety can be assured by strict adherence to the City's development standard, and by placing a fire hydrant every 500 feet throughout the project site.

Police Protection

SETTING

Police services are not currently provided to the project site since it is located outside the incorporated City limits. However, should the project site and the study area be annexed, the Vacaville Police Department would provide police services. The City presently has one sworn officer per 1000 population. However, the department believes that their manpower and vehicle level is presently inadequate to provide their desired level of service to the City. It should be noted that the City as a whole enjoys a low crime rate compared with other cities its size.

IMPACTS

- The development of the project site and projected building out of the region would have a major impact on the Police Department's service capability. "Leap frog" development, which would become more prevalent in the region, is more difficult to patrol and would place an additional strain on protection services.

- Present force capacity is one police officer per 1,000 population; however, a preferred ratio for the city would be 1.2 per 1,000 standard.^{22/} Thus, based on the latter standard, development of the project site would require the addition of 1.5 officers to the force resulting in a cost of \$45,000 to the department.^{23/}
 - In terms of regional growth with a projected population of 8,845, the department would need an additional 10.6 officers. Furthermore, the department would need an estimated one vehicle per 5 additional officers. Total costs to the department are summarized as follows:
- | | | |
|-----------------------------------|---|---------------|
| 10.6 Officers @ \$30,000/man/year | = | \$318,000 |
| 2 Vehicles @ \$ 7,000 | = | <u>14,000</u> |
| TOTAL COSTS | | \$332,000 |
- Since the department budget is supported by City revenues from property taxes, the availability of funds for additional manpower and equipment required by future regional growth is uncertain due to the reduction in revenue brought about by Proposition 13. The department requested 2 additional police officers for 1978-79, but these were cut from the budget as a result of losses in City revenues (see Property Tax section). According to Chief Tatum, the department will grow as City population increases, but the growth rate will most likely not be at an optimum ratio with population growth.

MITIGATIONS

- In the absence of additional manpower the only way to reduce crimes most often associated with residential development is to incorporate crime prevention techniques into building construction, and to provide proper lighting and identification of residences. The Growth Management System speaks to these mitigations.

- Neighborhood crime awareness and prevention programs which encourage citizen involvement could reduce future crime levels in the area.

Park and Recreation

SETTING

The adopted general plan map for the City of Vacaville calls for the development of a creekside strip park along Putah South Canal and Ulatis Creek. Furthermore, the general plan map shows a recreation site adjacent to Ulatis Creek in the central portion of the study area. In addition to the parks shown on the map, the City utilizes a set of park standards to determine the recreational needs of the population.^{24/} At present there are no park facilities on the project site or within the study area.

The Parks and Recreation Department has funds available to build new parks but not enough to maintain them, again due to a reduction in revenues caused by Proposition 13. Before implementation of the new tax structure, the department received \$.55 per \$100 of assessed valuation. In 1978-79, however, it will receive a percentage share of the \$4.00 per 100 of assessed valuation. This has resulted in a 1978-79 budget decrease of \$108,000 over the previous year and staff cutbacks of two full-time positions.^{25/}

IMPACTS

- The proposed Cal Com Development Plan does not show a creekside strip park along Ulatis Creek or Putah South Canal. The developer does propose to dedicate land for a public park on the site but has not indicated the acreage of the park.
- The Cal Com Development will increase the need for park facilities and recreational programs.

- A recreation fee based on bedroom count is imposed upon the developer. Assuming that the development would consist of 3 bedroom homes, the fee rate would be \$650 per single-family unit and \$689 per multi-family unit. This would cost the developer a total of \$313,716 (estimated) in recreation fees at full development. The first \$225 of the unit fee, or \$105,300 of the developer's total cost, would be deposited into an open space fund to be used for general community-wide parks and facilities. The remainder would be channeled back into the neighborhood.

MITIGATION

- The developer could make park dedication and pay the costs of building the park to the City's specifications. He could further establish a maintenance district which would cover park maintenance costs. In return, he would be reimbursed a portion of the recreation fee. The Growth Management System speaks to these mitigations.

Gas and Electricity

SETTING

The Pacific Gas and Electric Company would provide energy service to the project site and the study area. The company has indicated (Appendix E) that without final plans for review they are unable to supply specific information on their ability to serve the area.

IMPACTS

- A discussion of the energy consumption impacts of the project can be found in the energy section.

MITIGATIONS

- See Energy Section.

Telephone Service

SETTING

The Pacific Telephone and Telegraph Company expects to be in a position to provide service to the proposed project upon request in accordance with requirements of and at rates and charges specified in its tariffs on file with the California Public Utilities Commission. The telephone company notes that they will have to reinforce existing facilities and would like to be kept informed of construction schedules or any changes in plans (Appendix E).

The City of Vacaville requires all telephone lines to be underground. (Ord. No. 619).

IMPACTS

- None

MITIGATIONS

- None

References Cited:

- 1/ The computation of future estimates is discussed in Appendix E.
- 2/ In 1977-78, the City of Vacaville received \$1.93 per \$100 of assessed valuation whereas in 1978-79, the first year Proposition 13 was implemented, the City received only \$.26 out of the total \$4.00 per 100.
- 3/ Summaries of Expenditures (actual and adopted) and Revenues (actual and estimated) 1974-75 through 1978-79, City of Vacaville.
- 4/ Mr. Tim Killen, Assistant Finance Director, City of Vacaville, telephone communication 11-14-78.
- 5/ V.T.N., Master Water Plan, City of Vacaville. October, 1974.
- 6/ Joseph Munoz, Director of Public Works, City of Vacaville. Personal interview, November 14, 1978.
- 7/ Joseph Munoz, op. cit.
- 8/ Joseph Munoz, op. cit.
- 9/ Joseph Munoz, op. cit.
- 10/ RETA/NOLTE & Associates, EIR on Water System Master Plan. July, 1977. p. 104.
- 11/ Joseph Munoz, op. cit.
- 12/ EMCON Associates, Preliminary Geotechnical Evaluation of B & J Landfill Site - Vacaville. June, 1978.
- 13/ Don Moriel, Vacaville Sanitary Service. Telephone communication, November 27, 1978.
- 14/ Richard Barela and Harold Bush, Vacaville Unified School District. Personal interview, November 9, 1978.
- 15/ Harold Bush, Vacaville Unified School District. Personal interview, November 9, 1978.
- 16/ Richard Barela, op. cit.
- 17/ Richard Barela, op. cit.
- 18/ Richard Barela, Harold Bush, op. cit.

- 19/ J. H. Wood, Vacaville Fire Chief. Personal interview, November 9, 1978.
- 20/ J. H. Wood, op. cit.
- 21/ Timothy Killen, City of Vacaville. Telephone communication, November 14, 1978.
- 22/ Police Chief Gary Tatum, City of Vacaville. Telephone communication, November 17, 1978.
- 23/ An average cost figure (including salary, benefits and overhead) of \$30,000/officer was supplied by Chief Tatum.
- 24/ Theodore Osmundson & Associates, Parks and Recreation Element. 1969.
- 25/ Ron Mikalis, Director of Parks and Recreation, City of Vacaville. Telephone communication, November 16, 1978.

ENERGY

SETTING

All new residential buildings in California are required to meet standards and regulations established by the California Energy Commission (CEC). These regulations, effective July 1, 1978, set specific requirements for energy conservation methods such as insulation, glazing, and weatherstripping. Further amendments to these regulations established appliance efficiency standards. Guidelines for compliance with these standards are available from the Solano County Department of Building Inspection, and in the Energy Conservation Design Manual for New Residential Buildings, available through the CEC.

The new State Energy Conservation Regulations preempt local regulations, except those dealing with areas of energy conservation not covered by state regulations. In addition, local energy conservation requirements determined by CEC to reduce energy consumption by at least the same amount as the state standards, are exempt. The City of Vacaville has no specific energy conservation regulations, instead relying on and abiding by adopted state regulations.^{1/}

The sole supplier of electrical energy and natural gas in the Vacaville Planning area is the Pacific Gas and Electric Company. Current average energy consumption for nearby residences along Elmira Road have been estimated at 1000 kwh of electricity and 100 therms of gas per single family residence per month, and 700 kwh of electricity and 70 therms of gas per multi-family residence per month.^{2/} Pacific Gas and Electric currently sponsors an energy conservation home program to encourage prudent and efficient use of energy in new residential construction. In order to qualify for the program, developers are required to incorporate a variety of energy conserving devices and methods (not specifically required by state regulations) in their residences. Pacific

Gas and Electric will then reimburse the developer a certain amount per unit up to a set maximum for each project. For example, under Pacific Gas and Electric's premium conservation program, points are awarded based on the relative energy saving of various appliances and appurtenances that will be installed in a single or multi-family dwelling unit. When a minimum point total is reached, Pacific Gas and Electric will reimburse the developer \$60.00 per unit for single-family dwellings and \$40.00 per unit for a multi-family dwelling up to a maximum of \$6,000 per project. The maximum reimbursement level results in projects that rarely exceed 100 single-family or 150 multi-family units.^{3/}

Specific data on solar insulation or percentage of clear days in the Vacaville area are not available. While geography and climate in the study area indicates that solar energy would be feasible, no residences in the study area vicinity currently employ active solar energy systems. It should be noted that California provides a personal income tax deduction of 55 percent on the purchase price of solar equipment (up to a maximum of \$3,000). Grants are also available for solar energy demonstration projects through federal and state programs.

The principal mode of transportation in Vacaville, as in most California communities, is the automobile. For the past two years the City of Vacaville has provided limited mini-bus service to some of its community residents. This public transportation service presently operates along five routes, one of which encompasses Elmira Road in the vicinity of the proposed project site. The mini-buses, with a capacity of eleven persons each, pick up riders at designated bus stops. Under this program, where the City of Vacaville leases five mini-buses through the Solano County Economic Opportunity Council (SCEO) in Fairfield, elderly and handicapped citizens ride at a discount.^{4/}

IMPACTS

- Based on full development of the project site, approximately 394,800 kwh of electricity and 39,480 therms of natural gas would be consumed per month, assuming the average estimated rate. This rate of consumption could be reduced by approximately 25 percent through the use of energy conserving construction materials and appliances (see Mitigations).
- Since the proposed residential development site is at least two miles from many local services and a greater distance from employment or any special services, a substantial amount of fuel energy would be consumed by residents for transportation. Calculated by currently acceptable methods, the proposed residential development would generate an estimated 5,600 automobile trip ends per day.^{5/} Using a trip end average of 3.75 miles and an average engine efficiency of twenty miles per gallon, an estimated 1,050 gallons of gasoline would be consumed per day by residents for transportation. This figure is merely indicative of the level of fuel energy consumption anticipated for the project.

MITIGATIONS

- Full compliance with recently enacted state energy conservation regulations along with developer participation in the Pacific Gas and Electric conservation home program would guarantee a substantial reduction in energy requirements for the proposed residential project. In addition, energy savings are possible using passive solar design principles, active solar heating and cooling systems, and wind energy.
- Passive use of solar energy relies on a building design that minimizes temperature fluctuations within the dwelling. Basic solar design principles include thorough insulation and weatherstripping;

orientation of the long axis of the building so it faces south (within 22-1/2° of true south); placement of most windows on south side to maximize winter heat gain; providing an overhang on south side to shade windows from high summer sun; and covering the roof with a light-colored surface material to reflect heat. Most of these measures would not add appreciably to building costs and could generally save up to 50 percent on total heating and cooling costs.^{6/} Passive use of solar energy is simple, inexpensive, reliable, and would enable more efficient use of active solar energy systems should they be installed later.

- The use of active solar hardware systems is feasible for water heating and space heating and cooling, but may require a considerable initial monetary outlay. Basic active solar equipment consists of collectors, which use the sun's rays to heat water (or air) within tubes, and a distribution system that brings the heated water (or air) to heat exchangers or storage. Domestic water heating systems are of two basic types: thermosyphons, which operate by the natural movement of water across a thermal gradient; and pump systems. Solar space heating operates similarly to water heating except for the addition of a heat storage medium to accommodate periods of overcast weather. For both solar space heating and solar water heating, conventional systems may be necessary as a back-up.
- Wind energy can be exploited to pump water and sewage as well as to generate electricity. Because wind strengths vary considerably and no effective long-term storage is feasible, wind generators would require electrical back-up. Specific wind generator design would be dependent on local wind characteristics.

- Consumption of gasoline can be most effectively reduced by maximizing pedestrian/bicycle and public transportation options. This would require construction and designation of site and pedestrian pathways throughout the residential development as well as a connection link to the Vacaville commercial district. The flat terrain in Vacaville is especially conducive for bicycle transportation. Public transportation could be provided by expansion of the existing mini-bus shuttle service. An area should be reserved for future construction of a shuttle bus stop.

Other specific energy conservation measures that can be implemented within the proposed development include:

- Use of natural gas instead of electricity for cooking and for space and water heating if solar is not used. Electric resistance heating requires about twice the energy consumption as natural gas to produce the same results.
- Use of more accurate, clock-operated thermostats with both day and night settings to control space heating.
- Use of thermostats with more accurate temperature readings to monitor water heating.
- Installation of fireplaces entirely within house walls; inclusion of fire boxes, heat exchangers, and adjustable flues.
- Location of water heaters as close as possible to major points of hot water use, and insulation of hot water pipes.
- Use of fluorescent instead of incandescent lights for home lighting.
- Use of sodium-vapor lamps for street lights.
- The City's Growth Management System speaks to many of the above suggested energy conservation techniques.

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- 5/ Based on projected trip end generation factors of 9 for a single-family unit and 7 for a multi-family unit. Also includes a trip generation factor of 1000 shopping trips per day per acre of commercial development. A trip end represents either the beginning or termination of a trip and is consequently equivalent to half of a round trip. (See Traffic section).
- 6/ California Energy Commission, Energy Conservation Blueprint, October 1978.

ALTERNATIVES TO THE PROPOSED PROJECT

The alternatives set forth in this section are limited to those uses allowed under the Vacaville and Solano County general plans, with the exception of the no-project alternative.. By contract, the discussion is limited to the project site and does not include alternative uses for the study area.

The analysis of alternatives will focus on environmental impacts different from those described for the proposed CAL COM Development and will be of a general nature.

Alternative #1 - No-Project

DESCRIPTION

Under the no-project alternative the project site will remain in its present state (fallow) or it could be replanted for agricultural production.

IMPACTS

There will be no change or impact to the site's geologic, hydrologic, archaeologic, traffic and noise setting. Furthermore, this alternative will not require the extension of public utilities or services. If the site were to be recultivated, there could be a local impact on air quality due to periodic spraying of crops, and the soils could be depleted of some of its nutrient value from farming. While none of the site's environmental amenities would be endangered, the no-project alternative would not allow for the public to view the creek environs or enjoy the historic ranch house.

Alternative #2 - Planned Development-Reduced Density

DESCRIPTION

Under this alternative, the project site (88 ac.) would be developed at the low end of the density range (5 units/acre) as provided for in the Vacaville General Plan. After allowing for streets, public easements, etc.,

an estimated 66 net acres would remain for residential development on which could be built a total of 330 units. For the purpose of analysis, the distribution of these units is assumed to be 160 single family dwellings and 170 multi-family units. The reduced number of units would require the revision of the development plan submitted by CAL COM. It is assumed that multi-residential units would be set back further from the creek channel, and that the trees along the access road to the farm house would be preserved. The remaining single family homes would be on larger lots.

IMPACTS

The impacts of this alternative on the site's soils, geology, hydrology and archaeology would be the same as the proposed CAL COM Development. Even though the air quality, traffic and noise impacts would be proportionately less, the differences would be unmeasureable and the mitigations suggested would remain the same. While this alternative would generate less total revenues to the city, it may not substantially reduce the public costs of serving the project. Less water and energy would be consumed, as well as less sewage and solid wastes generated. The impacts on police, fire and school services would be relatively the same, although the project would probably result in less students to be educated.

The more beneficial impacts associated with this alternative is in the area of vegetation and wildlife. It is expected that a reduction in density with a similar arrangement of building types would conserve the creek and its environs, and preserve the ranch house, barns and surrounding vegetation, including the trees which border the access road to the ranch house.

CONCLUSION

A reduction in density, while maintaining the ratio of single-family and multiple residences, does not substantially change the ability of the city to accommodate this alternative in relation to the proposed CAL COM Development. However, this alternative provides a better opportunity for

the developer and the city to implement the design and conservation objectives of the general plan.

Alternative #3 - Low Density-Single Family Subdivisions

DESCRIPTION

Under this alternative the project site would contain 330 single family homes on individual lots. It is expected that this alternative would require more paved streets and driveways.

IMPACTS

The impacts associated with this alternative are the same as those discussed under Alternative #2. The only difference in impacts is that associated with design. Access to Ulatis Creek provided by the cluster of multiple residential units will be blocked by single family lots bordering either side of the creek. In addition, it would be more difficult to design a single family subdivision and still preserve the ranch house, accessory structures and associated vegetation.

GROWTH INDUCING IMPACT OF THE PROPOSED ACTION

In addition to the growth inducing impacts of the project on the study area, discussed fully in this report, another exists which merits attention. The project site and adjacent lands are already served by water and sewer mains, and are located relatively close to police and fire services. The only other growth related impact associated with this project would be an increase in the development value of the agricultural lands to the east. Annexation of these agricultural lands would be easier since the city limits would be extended by the project.

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APPENDIX A

COMMON PLANTS
OBSERVED NEAR NUT TREE ROAD:
VACAVILLE, CALIFORNIA

Habitat Areas				
Orchards	Fallow Fields & Abandoned Orchards	Ulatis Creek Riparian	Hill Grassland	Ranch House Landscaping

Common Name _____ Scientific Name _____

TREES

Cherry	<i>Prunus avium</i>	X		X
Apricot	<i>P. armeniaca</i>	X		
Peach	<i>P. persica</i>	X		
Almond	<i>P. amygdalus</i>	X		
Valley oak	<i>Quercus lobata</i>		X	X
Black walnut	<i>Juglans nigra</i>		X	X
English walnut	<i>J. regia</i>		X	X
California walnut	<i>J. hindsii</i>		X	X
Arroyo willow	<i>Salix lasiolepis</i>		X	
Yellow willow	<i>S. lasiandra</i>		X	
Sandbar willow	<i>S. hindsiana</i>		X	
Cottonwood	<i>Populus fremontii</i>		X	
Bigleaf maple	<i>Acer macrophyllum</i>		X	
Buckeye	<i>Aesculus californica</i>		X	
Blue gum	<i>Eucalyptus globulus</i>		X	X
Red gum	<i>E. rostrata</i>			X

SHRUBS AND VINES

California rose	<i>Rosa californica</i>	X		
Vinegar Weed	<i>Trischostema lanceolatum</i>		X	
Blue elderberry	<i>Sambucus mexicana</i>	X		
Tree tobacco	<i>Nicotiana glauca</i>		X	

HERBS AND GRASSES

Bromes	<i>Bromus</i> spp.	X	X	X	X
Fescues	<i>Festuca</i> spp.		X		
Wild rye	<i>Elymus condensatus</i>		X		
Alkali rye	<i>E. triticoides</i>		X		
Barleys	<i>Hordeum</i> spp.		X	X	X
Ryegrasses	<i>Lolium multiflorum</i>	X	X	X	X
June grass	<i>Koeleria cristata</i>				X

APPENDIX A (Continued)

Common Name	Scientific Name	Habitat Areas				
		Orchards	Fallow Fields & Abandoned Orchards	Ulatis Creek Riparian	Hill Grassland	Ranch House Landscaping
HERBS AND GRASSES (cont'd)						
Wild oats	<i>Avena</i> spp.		X	X	X	
Needlegrass	<i>Stipa pulchra</i>				X	
Bermuda grass	<i>Cynodon dactylon</i>			X		
Smilo	<i>Oryzopsis miliacea</i>			X		
Johnson grass	<i>Sorghum halapense</i>			X		
Cattail	<i>Typha</i> spp.			X		
Tule	<i>Scirpus californicus</i>			X		
Sedges	<i>Carex</i> spp.			X		
Duckweed	<i>Lemna gibba</i>			X		
Rushes	<i>Juncus</i> spp.			X		
Wild hyacinth	<i>Brodiaea pulchella</i>				X	
Mariposa	<i>Calochortus luteus</i>				X	
Knotweed	<i>Polygonum aviculare</i>	X				
Dock, sheep sorrel	<i>Rumex</i> spp.			X	X	X
Pigweeds	<i>Amaranthus</i> spp.	X	X			
California poppy	<i>Eschscholtzia californica</i>		X		X	
Mustards	<i>Brassica</i> spp.	X	X		X	
Lupines	<i>Lupinus</i> spp.		X		X	
Alfalfa	<i>Medicago sativa</i>			X		
Bur clover	<i>M. hispida</i>	X	X	X	X	X
Yarrow	<i>Achillea millefolium</i>				X	
Milk thistle	<i>Silybum marianum</i>		X			
Coyote brush	<i>Baccharis pilularis</i>				X	
Prickly lettuce	<i>Lactuca serriola</i>					
Yellow star thistle	<i>Centaurea solstitialis</i>	X	X	X	X	

TREE CULTIVARS

Lemon, orange, grapefruit, citron, grape, pomegranate, olive, lilac, strawberry tree, deodar cedar, Canary Island pine, incense cedar, arborvitae, Italian cypress, cycad.

VERTEBRATES EXPECTED IN THE STUDY AREA

FISH

Riffle sculpin	Gambusia
Golden shiner	California roach
Flathead minnow	Western sucker
Carp	Three-spined stickleback
Goldfish	Rainbow trout

AMPHIBIANS

California newt	Pacific treefrog
California slender Salamander	Yellow-legged frog
Western toad	Bullfrog

REPTILES

Western fence lizard	Racer
Coast horned lizard	Striped racer
Western skink	Gopher snake
Southern alligator lizard	Common kingsnake
Western ringneck snake	Western garter snake
	Western rattlesnake

BIRDS

White tailed kite	Plain titmouse
Sharp-shinned hawk	Common bushtit
Cooper's hawk	Bewick's wren
Red tailed hawk	Mockingbird
Kestrel	Robin
California quail	Loggerhead shrike
Ring-necked pheasant	Starling
Mourning dove	Savanna sparrow
Barn owl	Lark sparrow
Screech owl	White-crowned sparrow
Anna's hummingbird	Song sparrow
Common flicker	Fox sparrow
Acorn woodpecker	Golden-crowned sparrow
Western kingbird	Western meadow lark
Black phoebe	Red-winged blackbird
Violet-green swallow	Brewer's blackbird
Tree swallow	House finch
Barn swallow	Common goldfinch
Cliff swallow	Rufous-sided towhee
Scrub jay	Oregon junco
Common crow	Chestnut-backed chickadee

MAMMALS

Broad-handed mole
California myotis
Big brown bat
Red bat Pallid bat
Mexican free-tailed bat
Black-tailed jackrabbit
Brush rabbit
Beechey ground squirrel
Botta pocket gopher

Western harvest mouse
Deer mouse
California meadow mouse
House mouse
Black rat
Western gray squirrel
Raccoon
Striped skunk
Opossum
Feral cat

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APPENDIX B

CULTURAL RESOURCES EVALUATION
FOR THE CAL-COM PROPERTY,
VACAVILLE, SOLANO COUNTY, CALIFORNIA

Prepared for:

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PROJECT DESCRIPTION

In November, 1978, Madrone Associates requested that a Cultural Resources Evaluation be conducted of an approximately 80 acre section of land located in Vacaville, Solano County, California. The project area is bordered on the east by Nut Tree Road, on the south by Elmira Road, on the west by Putah South Canal and on the north by vacant fields and open terrain; it is noted that Ulatis Creek transects the project area (see Map 1). Project plans for the Cal-Com Property propose high-density residential development of the area; land-alteration activities associated with street development, utility installation and landscaping can be expected to occur as well.

It was determined that the requested evaluation for this property would include a literature review and field inspection of the area and the findings would be prepared for inclusion in an Environmental Impact Document.

An additional and separate phase of this study is to consist of a literature review of an approximately 750 acre area adjacent to the Cal-Com Property. The nature of this particular aspect of the study is to provide cultural resources information which can be utilized for planning purposes in consideration of development plans for the area.

CULTURAL RESOURCES BACKGROUND

The initial phase of this Cultural Resources Investigation consisted of a review of the maps and relevant documents which reference archaeological and historical resources in the general environs of the study area. The National Register of Historic Places (1978) and the California Inventory of Historic Resources (1976) were reviewed. Also, the archaeological files at the University of California, Davis, were consulted.

No archaeological or historical resources were recorded within the boundaries of the Cal-Com Property; the records also revealed that the project area has not been subjected to any previous cultural resources review.

The larger area adjacent to the Cal-Com Property (see Map 3), which was also reviewed, has no cultural resources documented within its boundaries either. Also, the records indicate that, with the exception of an archaeological survey of the filtration plant area adjacent to Elmira Road (Hellen, 1978), no systematic survey has been accomplished of the area.

To the south of the study area an archaeological site (4-Sol-35) is located adjacent to Alamo Creek. That resource was originally evaluated by Dr. True (1977) from the University of California, Davis; the site is described as a distinct prehistoric, village-type midden area. In 1977 a prehistoric

cemetery area was discovered adjacent to 4-Sol-35, and several burials were documented, removed and reinterred. Housing development trenching in that area would otherwise have destroyed those remains. Details regarding that project were presented in a resulting report (Holman and Chavez, 1977), and reference is given to that document as well as the True (1977) report for further information regarding these resources.

To the northwest of the larger study area, in the vicinity of Ulatis Creek, an isolated chopper-type tool of prehistoric origin was recovered during an archaeological survey (Hellen, 1978). That cultural item is similar to numerous such artifacts recovered from the Lake Berryessa area, and analysis as to function, age and distribution is ongoing by UC Davis archaeologists.

Generally speaking it is predictable that any area in the Vacaville region situated adjacent to a major drainage, such as Ulatis Creek, has a reasonable potential for the occurrence of archaeological resources. It is likely that in aboriginal times such a setting would not only have provided potable water, but would also have facilitated the occurrence of exploitable faunal resources and attracted faunal communities as well; both of these groups of resources were essential to the hunting and gathering patterns of Indian subsistence systems in those regions during prehistoric times. Therefore, it is possible to attribute a reasonable level of sensitivity regarding the potential for the occurrence of archaeological

resources within the larger study area (as well as the Cal-Con area).

It is therefore recommended that as various portions of that area are considered for housing development, or any other type of utilization which involved land alteration activities, archaeological field surveys be conducted of the considered acreage. Also, if any of the potential project areas have old structures on the property, an historic assessment should be made regarding the significance of the structures in relation to the history of the Vacaville and Solano County setting.

FIELD INVESTIGATION

The actual archaeological reconnaissance of the proposed Cal-Com development property was conducted by myself and was of the type described as a General Surface Reconnaissance (King, Moratto and Leonard, 1973). During the survey, close attention was given to the detection of those ground surface features which indicate the existence of prehistoric cultural resources in this part of Solano County (changes in soil color, composition and texture which suggest the occurrence of archaeological midden; unusual ground contours or abrupt changes in vegetation patterns; the presence of any artifactual materials, obsidian or chert flaking wastes, fire-fractured rock, charcoal and charred faunal remains). Particular efforts in this regard were concentrated on both sides of Ulatis Creek.

It was possible to conduct a relatively complete field survey of the area adjacent to both sides of the creek and adjacent

to the Putah South Canal and a drainage ditch that runs perpendicular to the canal. However, portions of the ground surface of the study area were so obscured by dense grass, thistle and weed growth, that archaeological survey of those areas was impossible; those areas are delineated on Map 1.

At the time of the archaeological survey it was noted that an old house was on the project property and it apparently warranted consideration within the subject cultural resources evaluation. Therefore, I contacted Mr. Leo Barker, a professional Historian/Archaeologist with experience in Historic Structure Evaluations, and arranged for him to survey and evaluate the Cal-Com Property resources. The following is a brief summation of Mr. Barker's findings:

The house is part of an historic ranch known as the Patton Ranch. The ranch site includes a large domestic structure with numerous smaller sheds and buildings to the north and east. On the east and southeast are two barns. Surrounding this site are numerous exotic trees, including Walnut and Eucalyptus, which line the graveled driveway to the house, as well as form a massive canopy over the complex. Included in this canopy are huge Valley Oaks, native to the area. To the west and southwest of the house is a garden system with volcanic stone-lined walkways and ornamental fountains of calcite or limestone and mortar. One of these fountains lies before the house and is a 2 meter high cylinder which originally poured water over its edge

and into a circular moat at the base of the fountain. Behind the house are a number of poultry sheds and behind these (to the north) is an area of trash pits of indeterminate age.

Mr. Barker was able to elicit the following historic sketch of the Patton property:

The Patton family arrived on this site in about 1886 (at this time Naddie Patton was only three years old). Finding an earlier foundation in this area, they built the present house atop it. Over the years this complex became a "working" ranch which raised sheep and cattle as well as other commodities. It is stated that an Indian family worked for the Pattons and lived in a small house (more of a shed) to the east of the main house, on the edge of Ulatis Creek. Within and around the house in later years, a nurse, two housekeepers (one a Mrs. Rutherford) and a number of gardeners were in constant movement, tending the massive gardens, maintaining the house and caring for the elderly Naddie Patton. This ranch was apparently well known and respected for its beauty until three years ago when Naddie Patton died. Shortly after her death the furnishings of the home were ransacked. It three years the garden has returned to the wilds. Persimmons, oranges, grapefruits, grapes, tangerines, pomegranates and other fruits still grow there. The fountain before the house has been partially vandalized and the house is slowly weathering.

Specific details regarding the description of the various structures and features are given in Mr. Barker's report, which is attached; reference is given to that document for further clarity of the historic resources. Also, photographs will be submitted when they have been developed.

CONCLUSIONS AND RECOMMENDATIONS

The described archaeological survey of the project property resulted in the detection of no archaeological sites within the study area. However, as previously discussed, not all of the property was subject to a field survey; therefore, it is recommended that prior to finalizing of the development plans, the designated areas be cleared of vegetation so they can be examined by an archaeologist.

Concerning the Patton Ranch, it is determined that the house, the surrounding structures and the grounds would likely meet the criteria for inclusion on the National Register of Historic Places and further efforts should be initiated to determine if such nomination is appropriate. Whether or not such an eventuality should occur does not detract from the immediate determination that the historic resources of the project property are of considerable significance. It is therefore recommended that the Patton House area (as delineated on Map 2) be preserved in its current state. While the development of high density residential structures would potentially create an indirect adverse impact of an aesthetic nature, such an effect could be greatly diminished by retaining the

majority of the trees and vegetation around the house and adjacent structures. These measures would create a visual buffer between the historic resources and the proposed housing and greatly enhance the preservation of those resources.

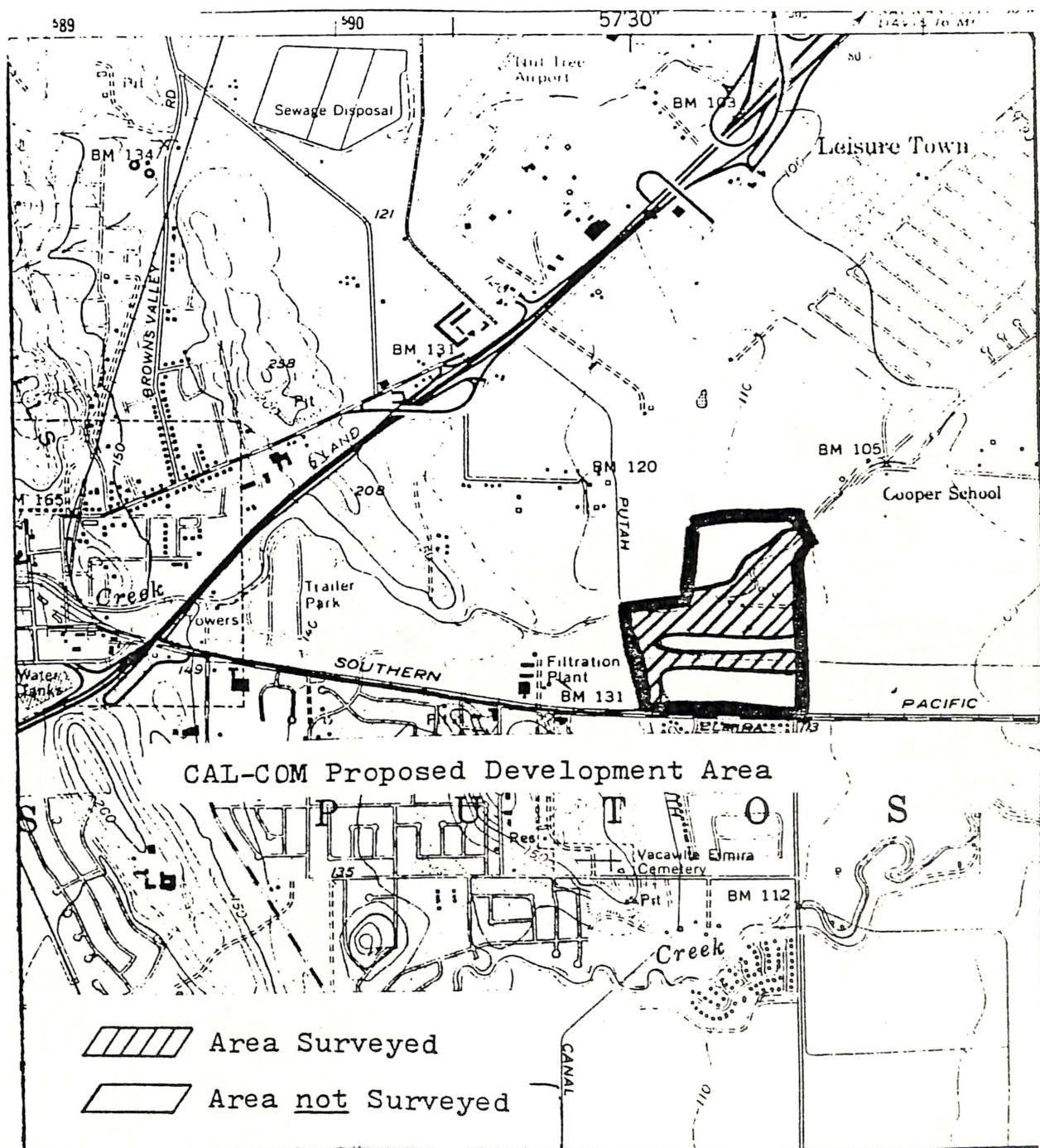
In addition to these recommendations, the following procedures would be appropriate regarding the Patton Ranch preservation efforts:

1. Title search, historical documentation of ranch needed to examine potential eligibility to the National Register.
2. Need to contact local and regional historians and historical societies concerning interests and involvement.
3. Zone formation to protect area of house and trees, hopefully extended at least to the stone foundationed barn, if not both barns.
4. Zoning could be converted to commercial center of business offices, surrounded by a small park within the subdivision, preserving the historical place, heritage trees, and the riparian corridor of Ulatis Creek.
5. If the barns are to be removed, perhaps construction, size, placement and foundation should be more thoroughly documented.
6. The owner should be made more familiar with the potential use of this property in terms of the Tax Reform Act of 1976 (Section 2124 of Public Law 94-455). This act establishes "important tax incentives for the preservation

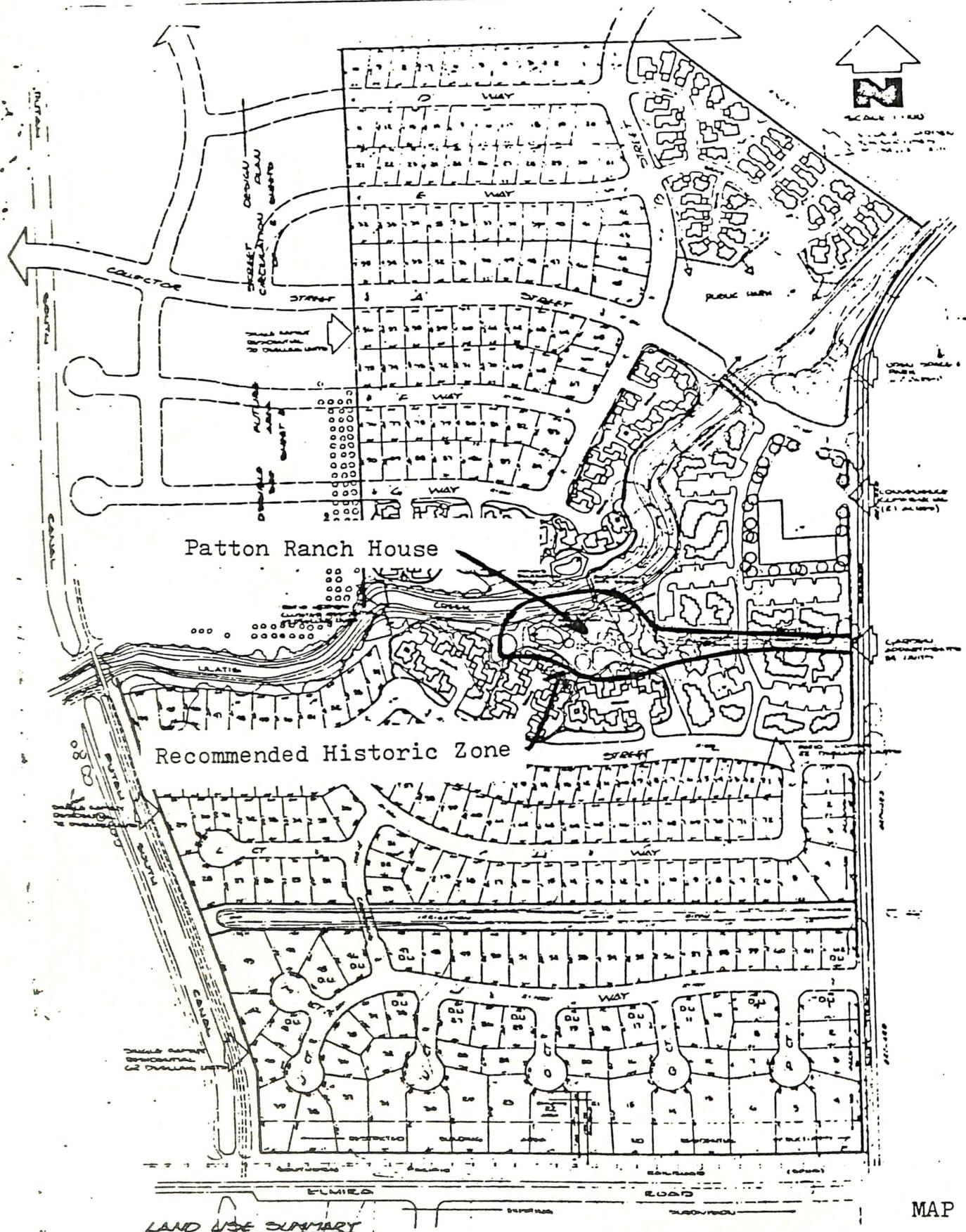
and rehabilitation of historic commerical and income-producing structures...the act contains provisions designed to stimulate rehabilitation and discourage destruction of historic buildings" (Preservation News Supplement, National Trust for Historic Preservation, November 1977). This would, of course, be contingent on the eligibility and acceptance of the property on the National Register, or within a historic district already on the Register. (Check with the SHPO for further data on this, or call the National Trust for Historic Preservation in San Francisco.)

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MAP 1



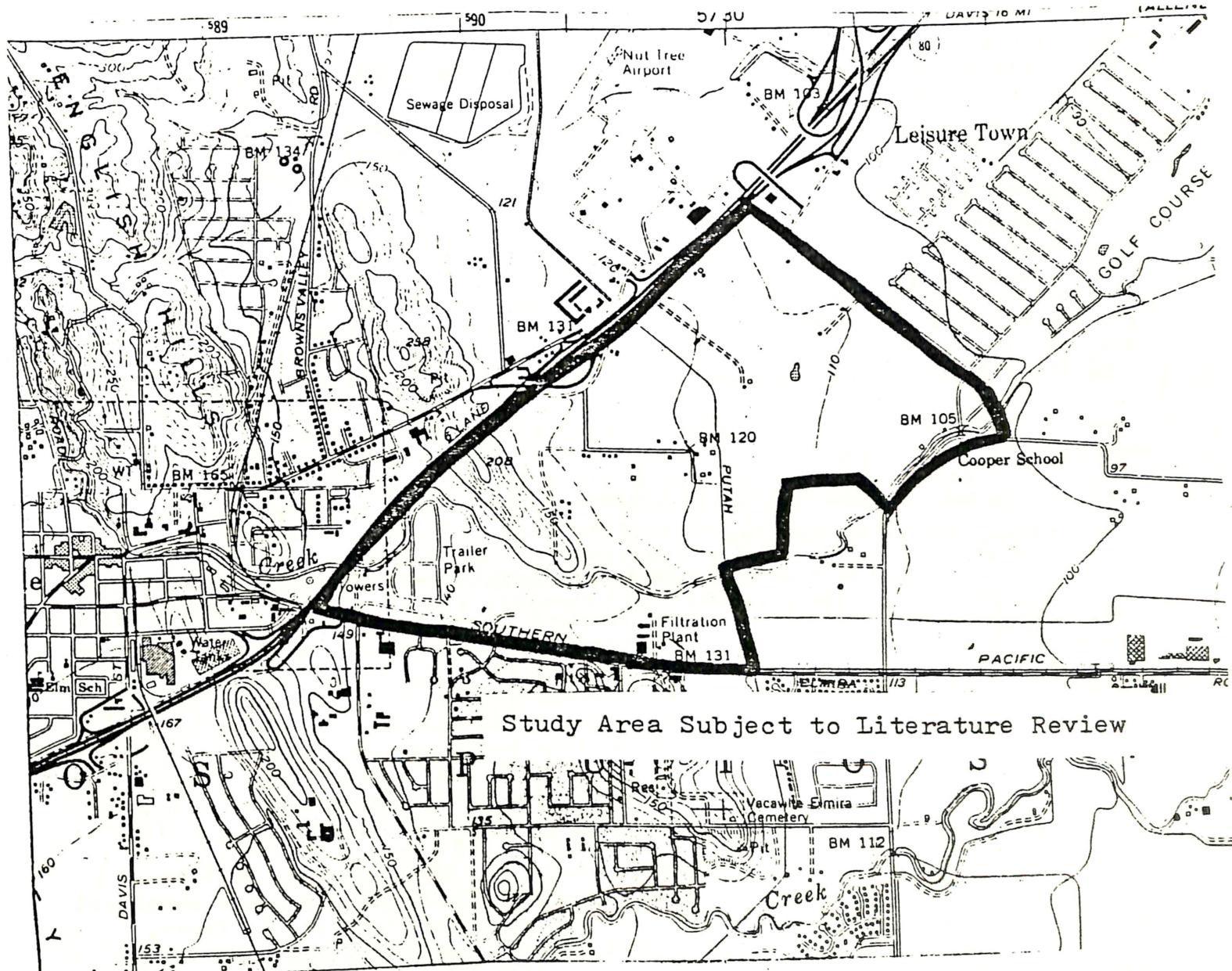
MAP 2

DEVELOPMENT PLAN

CAL-COM PROPERTY

CITY OF NEWBURGH, CALIFORNIA

A rectangular logo with a double-line border. Inside, the word "REINERS" is written vertically along the top left edge, and "HAYES" vertically along the top right edge. Below these, the words "CONSULTANTS" and "IN PLANNING" are stacked horizontally. At the bottom, there is smaller, illegible text.



MAP 3

HISTORIC SITE INVENTORY

1) Location of Property:

Solano County, California

U.S.G.S. Map-

U.T.M.G.- 5913374E/42255905N (Zone 10)
Township, Range and Section-

A.P.#

2) Common name of property:

The Patton Ranch

3) Date of inventory:

November 15, 1978

4) Owner of property:

5) Nature and present status of property:

Domestic/Ranch Complex

Presently leased and in use as poultry, queen bee, and hay business. Charolais cattle presently on property. Family resides in domestic structure.

6) Intention of owner towards property:

7) Description and present condition of property:

Site includes a large domestic structure with numerous smaller sheds and buildings to the north and east. On the east and southeast are two barns. Surrounding this site are numerous exotic trees, including walnut and eucalyptus, which line the graveled driveway to the house, as well as form a massive canopy over the complex. Included in this canopy are huge valley oaks, native to the area. To the west and southwest of the house is a garden system with volcanic stone-lined walkways and ornamental fountains of calcite or limestone and mortar. One of these fountains lies before the house and is a 2 meter high cylinder which originally poured water over its edge and into a circular moat at the base of the fountain. Behind the house are a number of poultry sheds and behind these (to the north) is an area of trash pits of indeterminate age.

The house itself is approximately 48' x 44', with its longest axis on the north and south. The house is of a vernacular style with 1½ stories and a cross gabled roof with an offset gable on the northern side. The roof is of redwood shingles, and on the northern side of the building are a number of gabled dormers with overhang. At each wing end, save the frontal gable, a chimney protrudes.

7) Description and present condition of property cont'd:

On the front of the house is a central portico entrance with turned posts and balusters. Directly above this a second porch has been built with similar lathe work below the front gable. The pediment area of the front gable is trimmed with diagonal plank siding. The rest of the house is sided with shiplap and barcut nails. Fenestration around the structure is not extensive, and generally consists of double sash windows with plain molding and lugsills. The front door is the only variation on this pattern, being composed of an upper glass panel with flashed glass (small rectangular stain glass panes surrounding the central pane often called Eastlake glass after the Eastlake house style common in the 1880's) and a lower carved panel of raw wood. All windows and doors are covered by screens. It appears as if an earlier side entry to the building on the east side has been renovated into a window.

The foundation of the house as well as its interior was not thoroughly examined, due to lack of access, but portions of the foundation appear to be of poured concrete slabs which line the sill of the building. There was apparently no basement to this structure.

This structure appears to date from the late 1880's or the last decade of the 19th century. It also appears as if this home is representative of a style of architecture common to the landed gentry of the Vacaville area during the late 19th century. It should be kept in mind that dating from purely architectural considerations can be dangerous and should be considered in concert with historic documentation.

The barns near the home are possibly from two separate periods of time. The first barn, closer to the house and north of the second barn, is approximately 47' x 53' (long axis is east-west). It is simply constructed with a medium gable, redwood shingle roof, and board and batten sides. Barcut nails were used in the entire construction save a small addition of a corrugated metal roof on the east side which used wire cut nails. The most interesting portion of this barn is an interior foundation of either sandstone or concrete overlain by notched floor joists. In this structure the foundation is in a central core of the building and the actual outside walls are superstructural overhangs. On the south side of this barn are two large board and batten roller doors, and inside is a raised floor area which is made of tongue and groove planking.

The second barn, to the south of the above, is approximately 60' x 57' (long axis on the north-south) and has a long sloping gable which almost resembles a gambrel roof. Construction of this barn is of board and board siding, although barcut nails are still in use. Later maintenance is of wire cut nails and corrugated metal. Foundations of this structure are apparently bricklined as opposed to the above barn, and the interior has been renovated into cattle feeding pens.

Of the two barns it is uncertain which of the two is the earlier structure, although the first one seems to be the most likely candidate, based on foundation type, notched floor joists, numerous handwrought materials (latches, hooks) on the walls, and a

7) Description and present condition of property cont'd:

small trash dump ^{outside} what seems to have been a small tackroom or bunkroom on the north of the barn.

Surrounding these three major structures are several smaller sheds and buildings which are mostly of a later date. To the south of the house is a garage or carriage house with medium gable roof and a similar shiplap/barcut nail siding. Most of these buildings are of a more recent construction and should not be considered with the above complex except as much later additions.

8) History:

Present tenants spoke briefly of an old housekeeper who visited the property recently. Based on this discussion is the following historical testimony.

The Patton family arrived on this site in about 1886 (at this time Naddie Patton was only three years old). Finding an earlier foundation in this area, they built the present house atop it. Over the years this complex became a "working" ranch which raised sheep and cattle as well as other commodities. It is stated that an Indian family worked for the Pattons and lived in a small house (more of a shed) to the east of the house, on the edge of Ulatis Creek. Within and around the house in later years, a nurse, 2 housekeepers (one a Mrs. Rutherford), and a number of gardeners were in constant movement, tending the massive gardens, maintaining the house, and caring for the elderly Naddie Patton. This ranch was apparently well known and respected for its beauty until three years ago when Naddie Patton died. Shortly after her death the furnishings of the home were ransacked. In three years the garden has returned to the wilds. Persimmons, oranges, grapefruits, grapes, tangerines, pomegranates and other fruits still grow there. The fountain before the house has been partially vandalized and the house is slowly weathering.

9) Should the property be nominated to the National Register of Historic Places?

Possibly. See #10

10) Statement of Significance:

Indeterminate at the time due to lack of complete historic data on Patton family, ranch or earlier owners (as intimated by testimony of an earlier foundation). House is in good condition and falls clearly within range of the criteria of the National Register (local significance, recognition of broad patterns of American history, characteristic style of architecture of a particular period or place in American history).

11) Name and location of personnel preparing this inventory:

Leo R. Barker
644 Clayton Street
San Francisco, California
94117

*Vernacular- Structure typical of a geographic region but not representative of any formal architectural style (Queen Ann, Eastlake, Egyptian Revival). Designed by builders and lacking sufficient ornamentation to pigeonhole structure into such major styles.

APPENDIX C

CAPACITY INDEX

DKG

Intersection: Elmira Road and Nut Tree Road

Condition: Existing P.M. Peak Hour

Index: 57 = level of service B

<u>Vehicle Movements</u>	<u>Hourly Volume (V)</u>	<u>Hourly Capacity (C)*</u>	<u>V/C (%)</u>	<u>V/C of Conflict Movements**</u>
1. Eastbound right turn	85	1500	6	
2. Eastbound	210)			
3. Eastbound left turn	40)	1500	17	17
4. Southbound right turn	40)			
5. Southbound	40)	1300	8	8
6. Southbound left turn	20)			
7. Westbound right turn	55)			
8. Westbound	225)	1700	20	20
9. Westbound left turn	60)			
10. Northbound right turn	50)			
11. Northbound	60)	1700	12	12
12. Northbound left turn	100)			

TOTAL INDEX

57

Notes: As the Capacity Index increases, congestion increases to where, above an index of 75 (service level "C"), motorists may have to queue for more than 1 traffic signal change to clear a signalized intersection. The Capacity Index method was developed by D. K. Goodrich based on methods reported in Traffic Engineering, January 1971 and August, 1978. This method supersedes the 1956 data of the 1965 Highway Capacity Manual.

* 1700 or less per lane.

** Generally the greater of movements 2 + 9 vs. 3 + 8 and 5 + 12 vs. 6 + 11. May also include certain right turn volumes.

CAPACITY INDEX

DKG

Intersection: Elmira Road and Nut Tree Road

Condition: P.M. Peak Hour, Added by Project

Index: 28 points added brings index to 57+28 =
85 = level of service D

<u>Vehicle Movements</u>	<u>Hourly Volume (V)</u>	<u>Hourly Capacity (C)*</u>	<u>V/C (%)</u>	<u>V/C of Conflict Movements**</u>
1. Eastbound right turn				
2. Eastbound				
3. Eastbound left turn	220	1500	15	
4. Southbound right turn				
5. Southbound	70			
6. Southbound left turn	20	1300	7	
7. Westbound right turn	50			
8. Westbound				
9. Westbound left turn		1700	3	
10. Northbound right turn	45			
11. Northbound				
12. Northbound left turn				
TOTAL INDEX			28	

Notes: As the Capacity Index increases, congestion increases to where, above an index of 75 (service level "C"), motorists may have to queue for more than 1 traffic signal change to clear a signalized intersection. The Capacity Index method was developed by D. K. Goodrich based on methods reported in Traffic Engineering, January 1971 and August, 1978. This method supersedes the 1956 data of the 1965 Highway Capacity Manual.

* 1700 or less per lane.

** Generally the greater of movements 2 + 9 vs. 3 + 8 and 5 + 12 vs. 6 + 11. May also include certain right turn volumes.

CAPACITY INDEX

DKG

Intersection: Elmira Road and Peabody Road

Condition: Existing 1978 P.M. Peak Hour

Index: 66 = Level of Service B

<u>Vehicle Movements</u>	<u>Hourly Volume (V)</u>	<u>Hourly Capacity (C)*</u>	<u>V/C (%)</u>	<u>V/C of Conflict Movements**</u>
1. Eastbound right turn	620	1700	36	
2. Eastbound	530)	3000	18	18
3. Eastbound left turn	85)			
4. Southbound right turn	70)			
5. Southbound	20)	1700	5	5
6. Southbound left turn	3)			
7. Westbound right turn	6)	3300	13	13
8. Westbound	420)			
9. Westbound left turn	80			
10. Northbound right turn	40	1000	4	
11. Northbound	30	1700	2	
12. Northbound left turn	900	3000	30	30
TOTAL INDEX			66	

Notes: As the Capacity Index increases, congestion increases to where, above an index of 75 (service level "C"), motorists may have to queue for more than 1 traffic signal change to clear a signalized intersection. The Capacity Index method was developed by D. K. Goodrich based on methods reported in Traffic Engineering, January 1971 and August, 1978. This method supersedes the 1956 data of the 1965 Highway Capacity Manual.

* 1700 or less per lane.

** Generally the greater of movements 2 + 9 vs. 3 + 8 and 5 + 12 vs. 6 + 11. May also include certain right turn volumes.

CAPACITY INDEX

DKG

Intersection: Elmira Road and Peabody

Condition: Added Due to Project - 7

Index: 73 - Level of Service C

<u>Vehicle Movements</u>	<u>Hourly Volume (V)</u>	<u>Hourly Capacity (C)*</u>	<u>V/C (%)</u>	<u>V/C of Conflict Movements*</u>
1. Eastbound right turn				
2. Eastbound	175	3000	6	6
3. Eastbound left turn				
4. Southbound right turn				
5. Southbound				
6. Southbound left turn	3	1700	.2	.2
7. Westbound right turn	3			
8. Westbound	30	3300	1	1
9. Westbound left turn	25	1700	2	
10. Northbound right turn	15	1000	2	
11. Northbound				
12. Northbound left turn				

TOTAL INDEX

7

Notes: As the Capacity Index increases, congestion increases to where, above an index of 75 (service level "C"), motorists may have to queue for more than 1 traffic signal change to clear a signalized intersection. The Capacity Index method was developed by D. K. Goodrich based on methods reported in Traffic Engineering, January 1971 and August, 1978. This method supersedes the 1956 data of the 1965 Highway Capacity Manual.

* 1700 or less per lane.

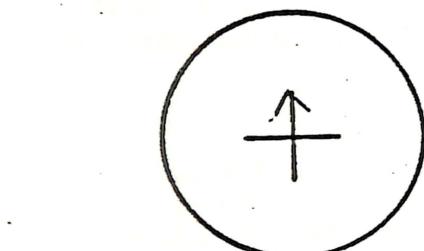
** Generally the greater of movements 2 + 9 vs. 3 + 8 and 5 + 12 vs. 6 + 11. May also include certain right turn volumes.

PEAK HOUR SERVICE LEVEL DEFINITIONS

<u>Capacity Index</u>	<u>Service Level</u>	
under 45	A	Typically the approach to the intersection appears quite open and turning movements are easily made.
46 - 70	B	The approach to the intersection is occasionally fully utilized and some delay may be encountered in turning movements. If signalized, no vehicle waits longer than one red indication.
71 - 81	C	Driver begins to feel somewhat restricted, the approach to the intersection is often loaded and back-ups may occur behind turning vehicles. If signalized, the driver may have to wait more than one red indication.
82 - 89	D	Increasing restriction causing substantial delays and queues on approaches to intersection. Queues do not become excessive but are generally present throughout the peak period. If signalized, vehicles may wait longer than two red indications.
90 - 95	E	Maximum capacity of intersection. Long queues of vehicles waiting upstream of the intersection. If signalized, vehicles may be delayed up to several signal cycles.
over 95	F	Completely unstable condition when intersection is completely jammed. Back-ups from locations downstream or on cross street may restrict movement of vehicles out of approach.

DIRECTIONAL TRAFFIC COUNT SHEET

McClellan St.



INSERT NORTH POINT

NO OF LANES		PEDESTRIANS		
		AM	PEAK	PM
TOTAL	PEAK			
1				
20				
480				
30				

NO OF LANES		PEDESTRIANS		
		AM	PEAK	PM
TOTAL	PEAK			
1				
6				
20				
40				

NO OF LANES		PEDESTRIANS		
		AM	PEAK	PM
TOTAL	PEAK			
2				
60				
270				
150				

NO OF LANES		PEDESTRIANS		
		AM	PEAK	PM
TOTAL	PEAK			
1				
55				
40				
150				

DIRECTIONAL TRAFFIC COUNT

McClellan St./Elmira Rd.

INTERSECTION (GIVE NAME)

Vacaville

CITY

Thursday 11/9/78

DAY DATE

4:15 - 4:25

HOUR TO HOUR

McClellan St.
from I-80
southbound ramps

Expanded to 1 hour

D. K. Goodrich

Elmira Road

DIRECTIONAL TRAFFIC COUNT SHEET

Orange Drive

NO OF LANES 1

	AM PEAK	PM PEAK	TOTAL
PEDESTRIANS	20	40	60

INSERT NORTH POINT

NO OF LANES	PEDESTRIANS	TOTAL	AM PEAK	PM PEAK	TOTAL
1				70	
				150	

DIRECTIONAL TRAFFIC COUNT

Nut Tree Road & Orange Dr.

INTERSECTION (GIVE NAME)

Vacaville

City 11-68-78

Tuesday, 11/3/ BAE

5:25 = 5:35 P.M.

HOME TO HOME

Expanded to 1 hour

...and the world will be at peace.

D. K. Goodrich

This section provides background information to aid in understanding the technical aspects of this report.

1. Dimensions of Environmental Noise

Three dimensions of environmental noise are important in determining subjective response. These are:

- 1) the intensity or level of the sound;
- 2) the frequency spectrum of the sound;
- 3) the time-varying character of the sound.

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB), with 0 dB corresponding roughly to the threshold of hearing.

The "frequency" of a sound refers to the number of complete pressure fluctuations per second in the sound. The unit of measurement is the cycle per second (cps) or Hertz (Hz). Most of the sounds which we hear in the environment do not consist of a single frequency, but of a broad band of frequencies, differing in level. The quantitative expression of the frequency and level content of a sound is its sound spectrum. A sound spectrum for engineering purposes is typically described in terms of octave bands which separate the audible frequency range (for human beings, from about 20 to 20,000 Hz) into nine segments.

Many rating methods have been devised to permit comparisons of sounds having quite different spectra. Fortunately, the simplest method correlates with human response practically as well as the more complex methods (Parkin 1964, Hillquist 1967, Galloway et al 1969, Botsford 1969). This method consists of evaluating all of the content of a sound in accordance with a weighting that progressively and severely deemphasizes the importance of frequency components below 1000 Hz, with mild deemphasis above 5000 Hz. This type of frequency weighting reflects the fact that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency midrange.

The weighting curve most often used is called "A" weighting, and the level so measured is called the "A-weighted sound level," or simply "A-level."

The A-level in decibels is expressed "dBA"; the appended letter "A" is a reminder of the particular kind of weighting used for the measurement. In practice, the A-level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. All U.S. and international standard sound level meters include such a filter. Typical A-levels measured in the environment and in industry are shown in Figure A-1.

Although the A-level may adequately describe environmental noise at any instant in time, the fact is that the community noise level varies continuously. Most environmental noise includes a conglomeration of distant noise sources which creates a relatively steady background noise in which no particular source is identifiable. These distant sources may include traffic, wind in trees, industrial activities, etc. These noise sources are relatively constant from moment to moment, but vary slowly from hour to hour as natural forces change or as human activity follows its daily cycle. Superimposed on this slowly varying background is a succession of identifiable noisy events of brief duration. These may include nearby activities or single vehicle passages, aircraft flyovers, etc., which cause the environmental noise level to vary from instant to instant.

To describe the time-varying character of environmental noise, the statistical noise descriptors L_{10} , L_{50} , and L_{90} are commonly used (Kittelson et al 1964, Griffiths et al 1968, Olson 1970, Scholes 1970, Gordon et al 1971). The L_{10} , as used in this report, is the A-weighted sound level equaled or exceeded during 10 percent of a stated time period. The L_{10} is considered a good measure of the "average peak" noise. The L_{50} is the A-weighted sound level that is equaled or exceeded 50 percent of a stated time period. The L_{50} represents the median sound level. The L_{90} is the A-weighted sound level equaled or exceeded during 90 percent of a stated time period. The L_{90} is used to describe the background noise.

As it is often cumbersome to describe the noise environment with these statistical descriptors, a single number descriptor called the L_{eq} is becoming widely used. The L_{eq} is defined as the equivalent steady-state sound level which in a stated period of time would contain the same acoustic energy as the time-varying sound level during the same time period. The L_{eq} is particularly useful in describing the subjective change in an environment where the source of noise remains the same but there is change in the level of activity. Widening roads and/or increasing traffic are examples of this kind of situation.

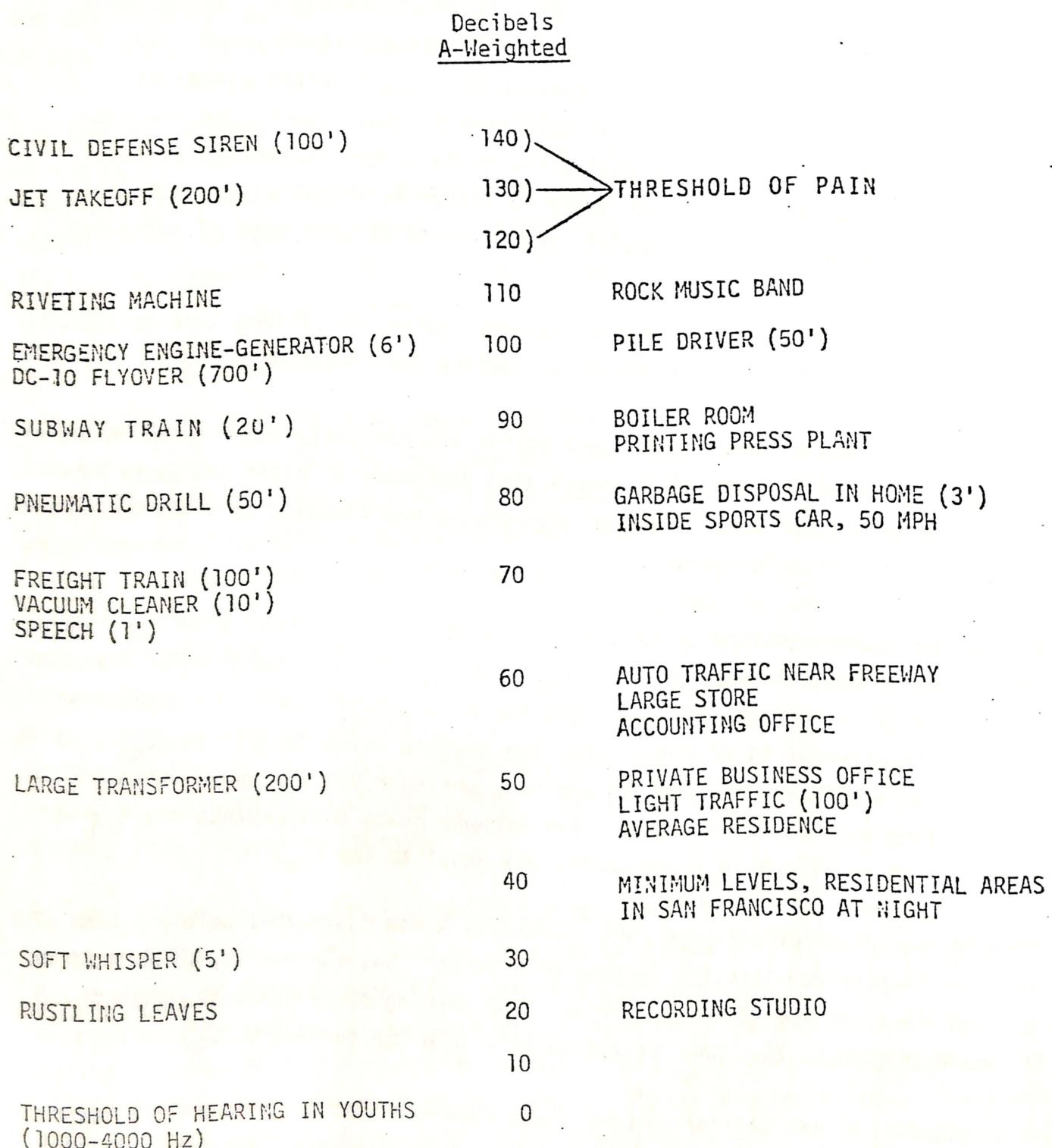
In determining the daily measure of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises.

During the nighttime, exterior background noises are generally lower than the daytime levels. However most household noise also decreases at night and exterior noises become very noticeable. Further most people are sleeping at night and are very sensitive to noise intrusion.

To account for human sensitivity to nighttime noise levels a descriptor L_{dn} (day-night equivalent sound level) was developed. The L_{dn} divides the 24-hour day into the daytime of 7 am to 10 pm and the nighttime of 10 pm to 7 am. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The L_{dn} then is the A-weighted average sound level in decibels during a 24-hour period with a 10 dB weighting applied to nighttime. For highway noise environments the L_{eq} during the peak traffic hour is approximately equal to the L_{dn} .

Another 24-hour descriptor is the CNEL (Community Noise Equivalent Level). CNEL divides the 24-hour day into the daytime of 7 am to 7 pm, the evening of 7 pm to 10 pm, and the nighttime of 10 pm to 7 am. The evening noise level is weighted 5 dB, the nighttime 10 dB. CNEL is typically within one decibel of L_{dn} .

Section 65302(g) of the California Government Code requires that either the L_{dn} or CNEL descriptor be used to prepare the noise exposure contours included in noise elements of general plans. The CNEL descriptor is used in the Noise Element adopted by the City of Vacaville.



NOTE: The distance (in feet) between the source and listener is shown in parenthesis.

Figure A-1: TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT AND IN INDUSTRY

2. Human Reaction to Environmental Noise

The effects of noise on people can be grouped in three general categories:

- 1) Subjective effects of annoyance, nuisance, dissatisfaction;
- 2) Interference with activities such as speech, sleep, learning/performance;
- 3) Physiological effects such as startle, hearing loss.

Subjective Effects of Noise

About 10% of the population is so sensitive to noise that they object to any noise not of their own making. Thus, some complaints occur even in the quietest environments. Another sizable portion of the population (about 25%), however, does not react or complain even in very severe noise exposures. In any given noise exposure, therefore, one should expect a variety of reactions from the people exposed, ranging from serious annoyance to no awareness. Noise abatement efforts do not affect the reactions of people who are either ultrasensitive or insensitive to noise; noise control is beneficial to only the middle two-thirds of the population, (Beranek, 1954). People can be expected to respond to changes in level as follows: (Beranek, 1954; Stevens *et al*, 1955)

- a) Except in carefully controlled laboratory experiments, an increase or decrease of only one dB in A-level cannot be perceived.
- b) Outside of the laboratory, a three-dB increase or decrease in A-level is considered a just-noticeable difference.
- c) An increase or decrease in A-level of at least five-dB is required before any noticeable change in community response would be expected.
- d) A ten-dB increase in A-level is subjectively heard as a doubling in loudness, and would almost certainly cause adverse change in community response. A ten-dB decrease in A-level is subjectively heard as a halving in loudness and represents a significant improvement in a noise environment.

It has been found that people in different types of neighborhoods have different reactions to noise. For a given noise level increase, instances of annoyance, disturbance and complaint will be greatest for rural areas, followed by suburban/urban residential, commercial and industrial areas in decreasing order. Similarly, a given noise will be more disturbing to people at night than during the day. Seasonal variations have also been noted; noise is more disturbing in summer than in winter. (Miller J. 1974)

Interference with speech communication. People generally have the ability to hear and distinguish one sound from a background of sounds. For example, one can often hear the telephone ringing over a background of music and conversation. However, this ability has definite limitations. Unwanted sound can interfere with the perception of desired sounds or signals; this interference is called masking. Masking can render a sound or a signal inaudible or unrecognizable. Masking becomes a serious problem when background noise interferes with perception of speech. Accurate speech communication is crucial to formal education, occupational efficiency, family relationships, and the overall quality of human life. This function may be lost or severely diminished in noisy situations.
(Miller J., 1974)

Background noise that interferes with speech can adversely affect the development of social and working relationships in adults. In language studies, people have been found to vary their voice levels and distances in accordance with the level of background noise, physical convenience, and cultural standard. Person-to-person distances of less than 4-1/2 feet tend to be reserved for confidential conversations, usually with a lowered voice, while distances greater than about five feet are usually associated with public messages delivered with a raised voice. Therefore, levels of background noise requiring the distance between talker and listener to be less than four feet may discourage communication among and be upsetting to persons not intimately associated. Similarly, there will be great reluctance to raise the voice level to deliver a personal message, even if this is necessary for speech intelligibility. (Hall, 1959)

Face-to-Face personal conversations at the usual distance of about five feet can proceed in A-weighted noise levels as high as 66 dB. In many conversations involving groups of people, distances between speaker and listener of five to twelve feet are common, and the level of the background noise should be less than 50 to 60 dBA. At public meetings or outdoors in parks, yards or playgrounds, where distances between talker and listener range from twelve to thirty feet, the A-weighted sound level of background noise should be kept below 45 to 55 dB, if practical speech communication is to be possible. (Hall, 1959)

Interference with sleep. Sleep is a complicated series of states, generally following similar patterns in people of all ages. The amount of time spent in the different states which comprise a night of sleep vary from the drowsy/awake state to the deep sleep state and back again. It has been widely observed that sound can interfere with any of sleep's stages and that people can acclimate themselves to certain noises and sleep through them. It is possible that only unfamiliar environmental sounds disturb sleep. For example, a rural person may have difficulty sleeping in a noisy urban area while an urban person sleeping in a rural area may be disturbed by the soft nighttime sounds of the countryside (Luce, 1966).

Intermittent noises of sufficient intensity alter the normal pattern of sleep, usually in the direction of lighter sleep. Long-term sleep disturbance by noise produces a "poor" sleep pattern with long periods of light sleep and frequent wakenings (Luce, 1966). Sleep is essential to normal functioning while awake, but loss of normal sleep has not been shown to cause adverse health effects. Most people can eventually adjust a disturbed sleep pattern and compensate by spending more time in deep sleep, becoming less responsive to external stimuli, or by napping (Miller, J., 1974).

No range of noise levels has been established as the minimum range at which sleep disturbance occurs. As a person experiences the deepening stages of sleep, the threshold of noise perception becomes higher. For instance, in the second stage of sleep ("moderate"), a noise 30 to 40 dBA above a person's threshold of hearing while conscious will be required to wake that person; in deep sleep, a noise must reach sound levels 50 to 80 dBA above that threshold to wake the person. Of course, very loud, brief noises (with sound levels of 100-120 dBA) will wake nearly everyone from any stage of sleep.

Interference with performance and learning. Noises seemingly begin to interfere with human performance when the A-weighted level exceeds 90 dBA. High frequency noise (above about 1000-2000 Hz) or irregular bursts of noise are more distracting and may produce more performance interference than low frequency noise or steady noise. The performance of tasks demanding accuracy or having a complex series

of steps is most likely to be adversely affected, without necessarily reducing the total amount of work performed (Miller, J., 1974). Learning especially in small children, can be seriously hindered by the presence of high constant levels of background noise, since the noise can be a barrier to speech perception and exchange (as previously mentioned). For children, this interference may have far-reaching detrimental effects, because speech communication is extremely important in developing language and reading skills (Young, 1975).

Noise effects on human performance can be grouped in three classes; 1) arousal; 2) distraction; and 3) specific effects. Arousal of bodily systems can result either in detrimental or beneficial effects on human performance, depending upon the nature of the task and the person's state prior to the exposure. For example, noise might induce muscular tension which could interfere with delicate movements, while a sleepy person might be beneficially aroused by the noise and perform more effectively in noise than in quiet. Distraction has been defined as a lapse or diversion of attention from the task at hand, and most often is the result of annoying characteristics of a noise. Specific effects include masking and muscular activation such as startle (Miller, J., 1974).

Physiological Effects of Noise

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories we have described. Yet, at any given sound level, individual responses will vary considerably, and physiological effects of a transient or possibly persistent nature may result. Brief sounds at levels exceeding 70 dBA can produce such physiological responses as general constriction of the blood vessels and changes in breathing, size of the pupils of the eyes, and gastric secretions (Miller, J., 1974). Steady noises of 90 dBA have been shown to increase tension in all muscles, and influence the response time in a simple choice task (Davis, 1956).

Long-term exposure to levels exceeding 70 dBA can cause hearing loss (U. S. EPA, 1974). While physiological arousal by noise can be beneficial in maintaining response to possible danger, continuing unnecessary arousal to irrelevant sounds can be annoying and possibly damaging to general health.

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APPENDIX E

A. METHODOLOGY FOR DETERMINING PROPERTY TAX REVENUES

1. ESTIMATION OF ASSESSED VALUATION AND DEVELOPMENT-GENERATED TAXES

Since the building of custom homes is planned for the project site, estimates of bedroom counts and sales prices are given instead of actual figures. Mr. Gary Stokes, president of CAL-COM Development, projected that, assuming present market conditions, single family homes would be sold at the \$50,000 to \$70,000 range while multi-family units (e.g., cluster, townhouses) would be sold at the \$50,000 to \$60,000 range. (Stokes, telephone communication, 11-3-78) Because of the flexibility associated with such estimates, both a low and high range are calculated to approximate total market values.

Based on current rental rates for apartments in the vicinity and construction costs per square foot, an average market value of \$32,000 per unit is estimated for the proposed garden apartments. (Al Damiano, Building Official, City of Vacaville, telephone communication, 11-9-78)

Table 1 shows the total market value ranges for the proposed development.

TABLE 1

Type	Per Dwelling Unit			Full Development	
	No.	Low Sales Price	High Sales Price	Low Estimate	High Estimate
Single Family	224 X	50,000	70,000	11,200,000	15,680,000
Multi-Family	130 X	50,000	60,000	6,500,000	7,800,000
Apartment	114 X	32,000		3,648,000	3,648,000
		TOTAL MARKET VALUE		21,348,000	27,128,000

With a total market value range of \$21,348,000 - 27,128,000, the total assessed value would be \$5,337,000 - \$6,782,000 or 25% of market value.

Estimation of development-generated property tax revenues is derived

by applying 1978-79 tax rates for the alternative site to the estimated assessed valuation for the proposed development.

ASSESSED VALUATION	X	TAX RATE	=	TAXES GENERATED
\$5,337,000	X	2.9388	=	\$156,843.75
\$6,782,000	X	2.9388	=	\$199,309.41

Thus, it is projected that the proposed development would generate property tax revenues in the range of \$156,843 - \$199,309.

2. DERIVATION OF 1978-79 TAX RATE

The 1978-79 tax rate figures in column 4 of Table 2 were derived in the following manner.

STEP 1. Out of the total tax rate of \$4.00 per 100 of assessed valuation, a percentage of 49.8997 is allocated to local agencies and 50.1003% to schools. A tax rate for the two categories is calculated based on the formula:

$$\text{total tax rate} \times \text{percentage share} = \text{tax rate for category}$$

$$\text{LOCAL AGENCIES: } 4.00 \times .498997 = 1.9960$$

$$\text{SCHOOLS: } 4.00 \times .501003 = 2.0040$$

STEP 2. Individual tax funds fall within these categories and they are also allocated a percentage share of the \$4.00 tax rate total. The appropriate tax rate derived in Step 1 is applied to the percentage share figures of these funds to determine their individual tax rates as follows: tax rate x percentage share = tax rate for jurisdictions. Absolute rates set for voter approval bonds must be added to these tax rates where applicable.

Examples:

For Fund No. 0001, the local agency tax rate is used.

$$1.9960 \times .549248 = 1.0963 = \text{tax rate for #0001}$$

For Fund No. 0608, the school tax rate is used. This fund also has an

TABLE 2
COMPARISON OF PROPERTY TAX DOLLAR DISTRIBUTION^{a/}

Taxing Jurisdiction	Fund #	1977-78 Tax Rate	1977-78 Taxes ^{b/}	1978-79 Tax Rate ^{c/}	1978-79 Taxes ^{d/}	TAXES AT FULL DEVELOPMENT ^{e/}			
						1977-78 Tax Rate	Low Est.	High Est.	1978-79 Tax Rate
General County	0001	2.6625	3,533.14	1.0963	1,494.34	142,097.62	180,570.75	58,509.53	74,351.07
Acc. Cap Outlay	0006	.1200	159.24	.0289	39.39	6,404.40	8,138.40	1,542.39	1,959.99
Aviation	0010	.0100	13.27	.0042	5.72	533.70	678.20	224.15	284.84
Recreation	0016	.0177	23.49	.0070	9.54	944.65	1,200.41	373.59	474.74
Solano Co. Debt Service Fund ^{f/}	0300	-	-	.0634	86.41	-	-	3,383.65	4,299.78
Vacaville Unif Library	0427	.2395	317.82	.0152	20.72	12,782.11	16,242.89	811.22	1,030.86
Vacaville Unif Bonds ^{f/}	0433	.4500	597.15	.3600	490.71	24,016.50	30,519.00	19,213.20	24,415.20
Community Col Bonds ^{f/}	0436	.0900	119.43	.1300	177.20	4,803.30	6,103.80	6,938.10	8,816.60
Vacaville Unif Library Bonds ^{f/}	0452	.0195	25.88	.0143	19.49	1,040.72	1,322.49	763.19	969.82
Co. Sch. Ser. Fund. Sup.	0500	.1865	247.49	.0694	94.60	9,953.50	12,648.43	3,703.88	4,706.71
Development Center	0503	.0399	52.95	.0151	20.58	2,129.46	2,706.02	805.88	1,024.08
Community Col M & O	0527	.5063	671.86	.1892	257.89	27,021.23	34,337.27	10,097.60	12,831.54
Vacaville Unif M & O	0608	4.2644	5,658.86	.5736	781.86	227,591.02	289,211.60	30,613.04	38,901.55
Co. Sch. Ser. Fund Supp.	0998	.0202	26.81	.0090	12.27	1,078.07	1,369.96	480.33	610.38
Co. Supt. - Bd. of Educ.	0999	.0223	29.59	.0084	11.45	1,190.15	1,512.39	448.30	569.68
Mosquito Abatement	0007	.0427	56.66	.0203	27.67	2,278.89	2,895.91	1,083.41	1,376.75
Solano Co. Flood Control	0027	.1300	172.51	.0565	77.01	6,938.10	8,816.60	3,015.40	3,831.83
Zone of Benefit 1	0030	.0800	106.16	.0076	10.36	4,269.60	5,425.60	405.61	515.43
Northeast Air Pollution Control	0049	.0173	22.96	.0018	2.45	923.30	1,173.29	96.06	122.08
Vacaville-Elmira Cemetery	0181	.0800	106.16	.0051	6.95	4,269.60	5,425.60	272.18	345.88
Solano Co. Flood State Water Project ^{f/}	0317	-	-	.0035	4.77	-	-	186.79	237.37
Vacaville City	0080	1.9300	2,561.11	.2600	354.40	103,004.10	130,892.60	13,876.20	17,633.20
Total General County		10.9288	14,502.54	2.9388	4,005.78	583,270.05	741,191.21	156,843.75	199,309.41

^{a/}Sources: Conjunctive Tax Rates for the County of Solano, Fiscal Year 1977-78; Mr. Martin Laforat, Auditor's Office, Solano County. Personal communication, November 9, 1978.

^{b/}Based on 1977-78 assessed valuation of alternate study area parcels; Total = \$132,700.

^{c/}For a discussion on the derivation of 1978-79 tax rates, see Section A.2 of the Appendix.

^{d/}Based on 1978-79 assessed valuation of alternate study area parcels; Total = \$136,308.

^{e/}Based on computations described in Section A.1.; low estimate = \$5,337,000, high estimate = \$6,782,000.

^{f/}Absolute rates; Prop. 13 is not applicable to voter approved bonds.

absolute bond rate which must be added to the figure.

$$2.0040 \times .140537 = .2816 + .2920 = .5736 = \text{tax rate for } \#0608.$$

STEP 3. The total tax rate is calculated by adding the fund tax rates to the absolute rates.

TOTAL ABSOLUTE RATE	\$1.03
TOTAL SCHOOL TAX RATE	.57
TOTAL LOCAL AGENCY RATE	<u>1.33</u>
TOTAL 1978-79 TAX RATE	\$2.93

\$1.33 is the amount local agencies will generate from the \$4.00 figure. Likewise, \$.57 is amount generated by schools.

3. EFFECT OF PROPOSITION 13 ON TAX REVENUES FROM PROPOSED DEVELOPMENT

Even though new development is assessed at current full market value, instead of at the 1974-75 base figure, the rate at which it can be taxed is limited to 1% of that market value. The City of Vacaville's share of that 1% is \$.26 for 1978-79. (See Table 2). In 1977-78, before Proposition 13 went into effect, its share was \$1.93. The difference between these two rates represents the loss in revenues received by the City from property taxes as a result of Proposition 13.

To illustrate what this means in terms of future property tax revenues to the City from new development, the two tax rates are applied to the projected market value of an average home planned for the project site. For a home selling for \$50,000 with an assessed value of \$12,500:

$$\begin{array}{lll} 1977-78 & 125 \times 1.93 & = 241.25 \\ 1978-79 & 125 \times .26 & = 32.50 \end{array}$$

The loss in revenues to the City attributed to Proposition 13 mandates is \$208.75 per \$50,000 home. The total loss in revenues can not be estimated since the developer proposes to sell homes of various price ranges, and has not yet determined the number of homes he will build in each price range.

B. PUBLIC UTILITIES

Water

Information regarding construction costs of water lines was obtained from Mr. Paul Hom of the City Department of Public Works. Unit costs are listed below:

<u>Improvements</u>	<u>Size</u>	<u>Unit Cost</u>
Water Main	6"	\$9 / linear foot
	8"	\$10 / linear foot
Gate Valve	6"	\$300 every 800 ft.
	8"	\$400 every 800 ft.
Storm Drain	12"	\$12 / linear foot
	15"	\$13 / linear foot
	18"	\$14 / linear foot
	21"	\$15 / linear foot
	24"	\$17 / linear foot
	26"	\$36 / linear foot
Fire Hydrant		#1,200 every 500 ft.

Sewage

Information regarding construction costs of sewer lines was also obtained from Mr. Horn. Unit costs are listed below:

<u>Improvements</u>	<u>Size</u>	<u>Unit Cost</u>
Sewer Line	6"	\$10 / linear foot
	8"	\$11 / linear foot
Manhole		\$1,000 every 400 ft.

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THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY

ENGINEERING DEPARTMENT

1961 WALTERS COURT, SUITE D
FAIRFIELD, CALIFORNIA 94533

November 13, 1978

John E. Roberto
Senior Consultant
Madrone Associates
P. O. Box 2970
San Rafael, California 94902

Dear Mr. Roberto:

In reply to your letter of October 9, 1978 regarding a residential development at the southeast corner of Elmira and Nut Tree Road in Vacaville, Pacific Telephone does not expect any problems in providing communication service to this project, within a normal and reasonable construction period. We will have to reinforce existing facilities and should be kept informed of current construction schedules and/or any changes in your plans.

At present, we have existing aerial plant on a joint pole line with Pacific Gas and Electric Company. If this proposed construction site is to be included within the Vacaville city limits, then city ordinance No. 619 will require "undergrounding" and the removal of this pole line on the southside of Elmira Road. The developer will be charged for the cost of this conversion.

Should you require additional information, then please contact M. D. Henningsen at our Fairfield Engineering Office. He can be reached by phone on 707 422-1620.

Please keep us informed of any progress and tentative schedules in regard to developing this area.

Sincerely,



J. W. Brosch
Engineering Manager

MDH:1km



